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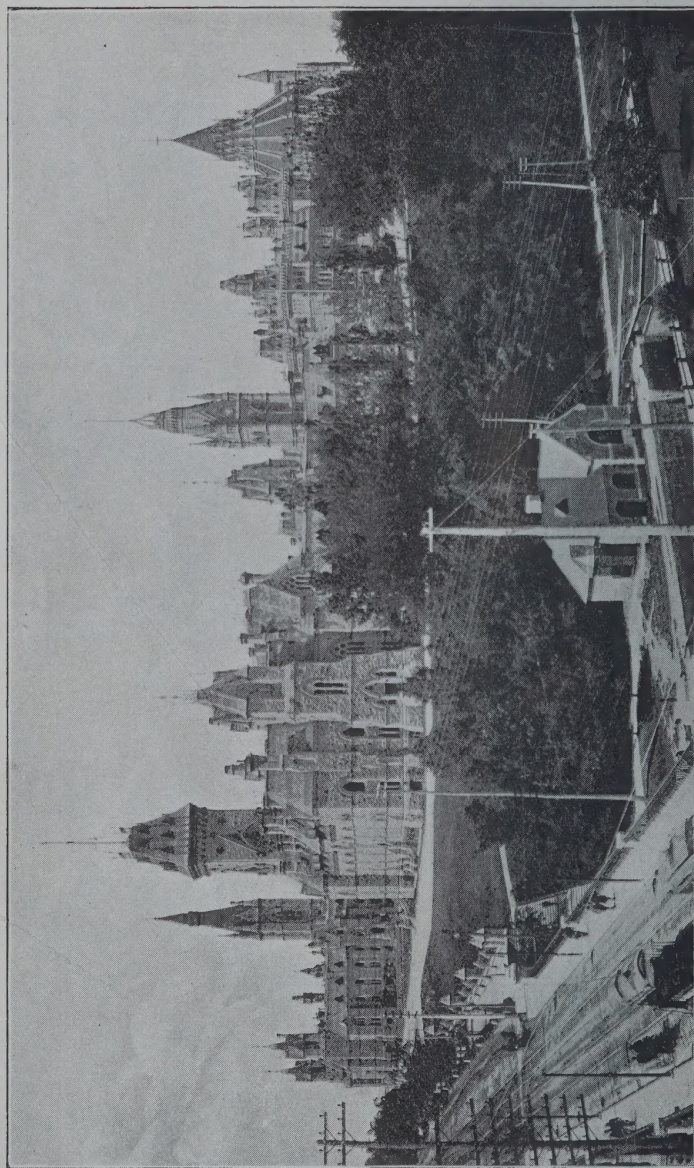
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STANFORD'S COMPENDIUM
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STANFORD'S
COMPENDIUM OF GEOGRAPHY AND TRAVEL
(NEW ISSUE)

NORTH AMERICA

VOL. I
CANADA & NEWFOUNDLAND

BY
SAMUEL EDWARD DAWSON
LITT.D. (LAVAL) F.R.S.C.

MAPS AND ILLUSTRATIONS

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TO

THE RIGHT HONOURABLE

BARON STRATHCONA AND MOUNT ROYAL

G.C.M.G., ETC.

IS DEDICATED

THIS ATTEMPT TO DESCRIBE THE COUNTRY IN
WHICH HIS LIFE HAS BEEN PASSED ;
WITH WHOSE VARIED ASPECTS HE, MORE THAN
ANY OTHER LIVING MAN, IS FAMILIAR ;
AND OF WHOSE RECENT SOCIAL, COMMERCIAL,
AND EDUCATIONAL DEVELOPMENT
HE MAY TRULY SAY,
PARS MAGNA FUI

42403

PREFACE

It is opportune, when the Jubilee of Her Gracious Majesty the Queen and Empress Victoria is being celebrated with such unprecedented pomp and brilliancy, when the widespread empire subject to her crown has become for the first time conscious of its vast extent and its unlimited potentialities of organisation and development, to pass under review in a succinct and orderly statement those territories in North America which fall very little short of extending over one-third of the entire British Dominion.

This is the more fitting, inasmuch as the Dominion of Canada and the province of Newfoundland possess many physical peculiarities, and have passed through many experiences imperfectly known to the general reader. Of the numerous colonies which, by their chosen representatives, clustered round their Sovereign at her happy Jubilee, Newfoundland is the oldest; while the Dominion of Canada is first in rank, not only by its magnitude, but because it has been the first to take, by the confederation

of its provinces, a forward step towards the solution of the great problem of the ultimate organisation of the Empire.

The object of this volume is to present in a concise form the leading physical characteristics of the immense area in North America which still owns allegiance to the British Crown. This has, no doubt, often been done before; but during the past few years the development of these regions has been so rapid as to outstrip such works as have been written upon the subject.

The information is drawn mainly from the latest reports presented to the Parliament of Canada by the men, officials for the most part, who are engaged in exploring the newer territories or in collecting the information necessary for the administration of the Dominion and of its integral provinces.

This is not, however, the sole object of the book. The physical conditions of every region have, doubtless, a most important influence in moulding the character of its inhabitants, but they are not the only factors to be taken into account in the formation of a people. There are moral influences which have contributed very powerfully to form the political and social results manifested in the important position in the Empire now occupied by the Dominion of Canada. The short historical sketches interspersed throughout the book are intended to show why these great regions are still subject to Her Majesty's

sceptre, and why their inhabitants are still attached in loving loyalty to her person and office.

Although these historical notices are of necessity very brief, they may serve to invite further inquiry into a subject very little understood. The history of these American provinces abounds in passages of interest and even of romance, and in these respects is not excelled by the history of any other people among the younger nations of the world. The dominant characteristics of the people of these provinces have been manifested in times of discouragement and trial, in peril and disaster, as well as in the formative periods of self-organisation and advancement. Whether, then, the Dominion of Canada be considered in its extent, in its resources, or in its history, the present volume may tend to show that it has, under Providence, not only the right to exist and to control its own destiny, but that it has as fair a prospect of continuance as any other community on the two continents of the Western Hemisphere.

The philosophy of history is always more sound when it is written after the history is over; for the problems presented by an active and growing community, and the contingencies which unexpectedly arise in all human affairs, are too complex to be grasped by any one mind, no matter how great. The people of the British American provinces, as will appear in the following pages, are nine-tenths of Canadian birth, and their views must be

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accepted as paramount by those, reared in other lands, who would appear to be anxious to sell a birthright not their own. The Dominion of Canada stands on the Western Continent for a principle—the dominant principle of the Anglo-Norman race—of steady advance in orderly self-government, growing, as the trees grow, without precipitation or even haste, but never pausing and never retrograding; therefore the Canadian people take little interest in self-appointed prophets or in doctors of destiny, but they carry on their work year by year, as duty calls, leaving the result to that controlling Power which has kept them safe in the past and is able to do so in the future.

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THE DOMINION OF CANADA

AND

NEWFOUNDLAND

CHAPTER I

INTRODUCTORY

A COMPENDIUM of the geography of British America must be prefaced by a disclaimer of all pretension to originality. Such a book can only be a presentation in logical order of an immense number of facts recorded and observations made originally by explorers and found in books of travel or in official reports. To give credit in due proportion to each of the authorities from which this work has been compiled would be an impossible task, and, if it were possible, would confuse the reader with unnecessary details; moreover, many works of authority are themselves built up on the labours of officials whose names have been merged in the routine of their duties. A short list of authorities, where fuller details of the subjects herein treated may be found, is given at the end of each chapter; but it will be convenient here, at the commencement, to acknowledge the main sources from whence the information given has been derived.

First, and before all, no treatise on the physical features of British America can be written without drawing largely from the reports of the very able staff of scientific men who have been connected with the Geological and Natural History Survey of Canada, from its inception under Sir William Logan down to the present day. Before his death the main physical facts concerning the two provinces of old Canada had been collected in the great report of 1863. About the time of the appointment of Dr. Selwyn came the necessity of extending the operations of the Survey over the immense and little-known region of the north-west. It seems almost invidious to make special mention of any single member of a staff which has collectively done so great a work, for the gaps on the maps of the Dominion have been necessarily filled up by those to whose lot it fell to work in the newer territories.

In this way it has happened that the name of the present Director of the Survey, Dr. G. M. Dawson, has become bound up with the geography and geology of British Columbia and the adjacent territories to the north, as well as with the belt along the 49th parallel. The regions round Hudson's Bay will always be associated with the name of Dr. Robert Bell, and the Rocky Mountains and sources of the Mackenzie with that of Mr. R. G. McConnell. Mr. J. B. Tyrrell's explorations north of Manitoba and in the Barren Grounds must always be referred to when writing about those regions, and Messrs. Low and Eaton, in a two years' exploration attended with great hardships, have filled up the map of central Labrador, previously less known than the interior of Africa.

The Dominion Lands Branch of the Department of the Interior, under the direction of the Surveyor-General,

Captain Deville, has been doing, in addition to its more prosaic task of settlement surveys, a large amount of scientific exploration. Mr. William Ogilvie has, through a series of years, made many most arduous explorations in the immense territories about the Yukon and Mackenzie rivers. The most inaccessible recesses of the mountain ranges at the west are now being mapped by a method of photographic survey first introduced in this department.

In like manner the Acadian provinces of the Dominion can never be studied without reference to the classic work of Sir William Dawson, *Acadian Geology*, for therein is to be found the most complete collection and statement of the geographical and geological facts concerning the provinces on the Atlantic seaboard. The natural history, and especially the botany of the Dominion have been the life study of Professor Macoun, whose published papers must be referred to on these subjects.

In treating upon the separate divisions of British America older names must be mentioned. It will be impossible to write about Quebec without allusion to La Salle and Jolliet, the discoverers and pioneers of the Great West, and to La Verendrye who carried the French flag to the Rocky Mountains, or about Montreal without allusion to Sir Alexander Mackenzie and the daring and hardy northwesterners who found the way overland to the Polar Ocean and the great South Sea.

Nor should David Thompson be forgotten, the astronomer of the North-west Company, who explored so many of the passes across the mountains in the early years of this century, and was the first white man on the Upper Columbia. The Thompson river recalls his name. Many have profited by his labours, but he died in poverty at Longueuil near Montreal at an advanced age. The

Yukon will always suggest the name of its discoverer, Robert Campbell, and recall his wonderful journey of 9700 miles, and his snowshoe tramp of 3000 miles, through the wilderness. He was the pioneer in that remotest north-west.

Hudson's Bay must of necessity recall the explorations of Hearne and Dease and Simpson and Rae and other officers of the great fur company of the North, and the Arctic regions of the Dominion are forever associated with memories of Franklin and Richardson and Back.

Parry, "the prince of Arctic navigators," must be mentioned whenever the farthest north is spoken of. His name is attached to the northernmost territory of Canada, and the Parry Archipelago may yet be the starting point of a successful expedition to the Pole. The western shores of the Dominion will ever be associated with the name of Vancouver, whose exact and thorough surveys are still the basis of all our maps.

To some of these more salient names reference must be made, but it would indeed be a heavy task to attempt to make mention of all those whose labours, and whose lives even, have been expended in the exploration of the northern half of this continent; it must suffice to make a general acknowledgment of indebtedness once for all.

CHAPTER II

THE THRESHOLD OF THE NEW WORLD

THE westward voyager in the higher latitudes of the North Atlantic will meet with many indications of the western continent long before he sees its shores. Suddenly, almost as if at a definite line between 30° and 40° west longitude, the ship will pass from the warm and deep blue water of the Gulf Stream into the light green of the colder current flowing from the far North. These two great ocean streams are such important factors in the climatic conditions of the countries on the opposite sides of the North Atlantic that it is necessary to dwell for a short time upon their direction and characteristic features; for they are the great thermal influences which differentiate the climates of north-east America from that of countries in north-western Europe situated under the same parallels of latitude.

The Gulf Stream, gathering its momentum in the tropical basin of the Gulf of Mexico, transfers by its heated waters to the shores of Europe warmth generated in the western hemisphere which softens the climate of western Europe. New York city is in the latitude of Naples, St. John's, Newfoundland, in that of Paris, and the Strait of Belle-isle in that of London. Vessels sailing westwards cross the Stream at a higher or lower latitude,

according to the season, for its northern limit is not constant. Taken at the meridian of Cape Race its northern edge is at 40° to 41° in winter, while in September, when the sea is warmest, it stretches up as far as 45° or 46° north latitude. The difference in temperature in the depth of winter off the Grand Banks of Newfoundland between its waters and those of the surrounding ocean ranges from 20° to 30° Fahrenheit.

This remarkable current, after issuing from the Florida Straits, flows north-eastwardly, following the general direction of the American coast but at a distance from it; for the colder Arctic water runs inside in a contrary direction along the land. About the latitude of Cape Cod the Gulf Stream curves more outwards and flows across the ocean. In longitude west about 20° it divides—one branch envelops the British Isles, the other flows more to the north, prevents the lakes in the Shetland and Faroe Islands from freezing, keeps the harbour of Hammerfest, the most northern port in Norway, open all winter, and makes its influence felt as far north as Spitzbergen. To steer westwards against this drift is, in sailor's language, to sail uphill, and the usual ocean routes cross its course. The Gulf Stream and its attendant fogs acted as a veil which hid America through long ages from the sailors of western Europe in those latitudes where, from the converging of the meridians, the distance between the two worlds grows continually less and less.

Such are the benefits which the old world had been unconsciously receiving for ages from the unknown and hidden western continent. On the north-west coast of America similar conditions produce similar effects, but here on the north-east coast the provinces of British America and the north-eastern States of the Union are affected unfavourably as to climate by this ocean circula-

tion. The Arctic current flows along their coasts in a southerly direction and washes the whole eastern shore of the continent down to Florida, flowing inside of the Gulf Stream as a river of cooler water of varying surface-width, and dipping finally under the Gulf Stream in its course to the Equator to renew the circuits of the oceans. The Gulf Stream, originating in the tropics where the diurnal motion of the globe is swiftest, passes to the slower moving regions of the north and, by its accumulated momentum, is projected towards the east, while the Arctic current, originating in the polar ocean, starts with a deficiency of momentum and, as it flows southwards, is, from the same cause, thrown westward upon the eastern coast of the western continent. Other conditions no doubt exist—conditions of varying specific gravity, of varying heat and prevailing winds—which operate to modify or intensify the interaction of these great rivers of the North Atlantic ocean; but the dominant cause of the opposite direction of these currents is now admitted to be the varying speed of the surface of the globe revolving on its axis upon water unequally heated and flowing northward and southward towards an equilibrium. It is the existence of this south-west Arctic current which renders credible the voyages of the Northmen to America in the tenth and eleventh centuries; for, by means of it, they could sail from Greenland or Iceland, as it were downhill, along the coasts of Newfoundland, and in rear of the veil which was to hide the new world for four more centuries from the enterprise of nations less advantageously situated in that respect.

Without, however, diverging to discuss the inviting problem of the Viking discoveries, the reader's attention must be strongly directed to this Arctic current and its wide-reaching effects upon the American continent. The

polar overflow seeks the south in several convergent streams. The current which flows out of Baffin Bay is reinforced at Cape Farewell by a strong current down the eastern shore of Greenland. A current is also laid down on some charts as issuing from Hudson's Strait; but, from the report of Lieutenant Gordon, R.N., it would seem that bergs from Davis Strait are often seen to pass in along the north shore of Hudson's Strait, almost as far as the Bay, and out again along the southern shore; the strong tidal currents, moreover, confuse the problem and render it uncertain how far the outward current on the south shore of the Hudson's Strait is or is not a swirl of the current from Baffin Bay. However this may be, the currents east and west of Greenland unite to form the great stream of cold water which is thrown upon Labrador and is often called "the Labrador current." Down this stream pass a stately procession of icebergs, and, in the proper season, immense masses of field ice. The bergs are the product of the glaciers of the Greenland ice-cap and of the high polar ever-frozen sea. These continue steadily on their southward course into the Gulf Stream where they melt, impelled onward into the warmer waters by the deep-down current from the north still acting upon the submerged seven-eighths of their bulk, and carrying them steadily across the eastward flowing surface stream.

Other indications of the western world soon present themselves to the observant traveller long before land is seen. In longitude 48° west the ship commences to cross the submarine threshold of America—that remarkable plateau known as the "Banks of Newfoundland." Signs of the change will not be wanting. The largely increasing number of sea-fowl will, during the fishing season, proclaim some unusual condition; but chiefly will be

remarked the persistence of fogs caused by the contact of opposing currents of water very different in temperature. In summer the Gulf Stream flows over the southern end of the Grand Bank with a velocity of one knot an hour, and laps along the eastern border of the Arctic current at no great distance from the outer edge of the Bank along its whole length. At the line of contact of these currents, even in the quietest weather, a disagreeable tumbling sea is experienced; but over the Grand Bank itself the sea is not so heavy as outside. Among sailors the Gulf Stream is called the "weather breeder" of the North Atlantic, and the records show that the great hurricanes have usually followed its course. The French fishermen in the last century called it "the storm king," *roi des tempêtes*, and when they found the sea very heavy they supposed they were "debanked," and used to say that they had got "away from home," *qu'ils ne sont pas chez eux*. These, with many similar sayings of men whose lives are spent among the dangers of these seas, go to show that the sea upon the Banks is quieter than outside, although a landsman may not be able to detect much difference. It will appear then that the conditions which produce vapour are never far distant, and, in fact, any wind in which east or south preponderates in ever so small a degree will bring upon the banks and neighbouring coasts dense and persistent fogs. The colour of the sea over the banks is a characteristic light green, not only because the water is shallower, but because, from the melting of enormous masses of ice, it is distinctly less salt than the deep blue water of the profounder ocean.

It has been supposed by some writers of weight that the Banks are the result of detritus carried down by the secular stream of Arctic icebergs and deposited at their

melting—that they are, as Reclus expresses it, “the general moraine for the glaciers of Greenland and the polar archipelago”; but, if that were the case, the edges of the plateau might be expected to slope gradually down to the deeper abysses. On the contrary these uplands of ocean terminate, at their eastern and southern edges especially, in veritable submarine precipices over which the sounding line drops from a depth of 22 or 32 fathoms to one of many hundreds. The outline of soundings is most marked around the whole contour of the plateau, as well as over its surface, and the lead line is an infallible guide to the sailor in ascertaining his position. The bottom also is very characteristic, consisting of sand, gravel, and broken shells, with mud only occasionally in some channels or deeper valleys.

Smaller marine plateaus lie out before the coast of Nova Scotia and New England, and, in long. $44^{\circ} 38'$ west, there is an outlier called “the Flemish Cap,” extending 60 miles north and south by 25 miles broad, upon which the soundings are less than 100 fathoms. There is also an elevation of the ocean bed along the whole North American coast, due probably to the secular waste of the continent; but the bank off Newfoundland is known as the “Grand Bank,” because of its immense area and striking characteristics.

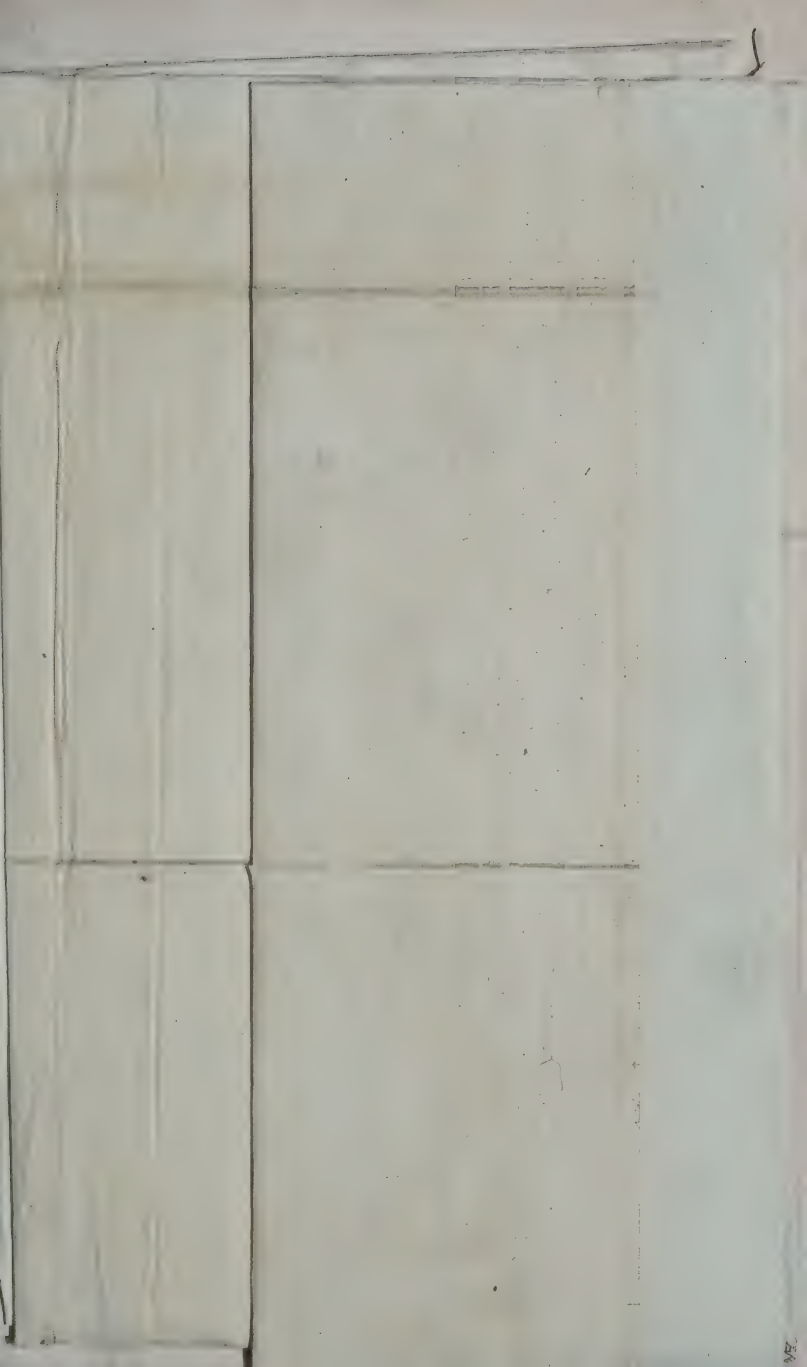
The Grand Bank of Newfoundland extends from 43° to 48° north latitude and from 48° to 55° west longitude. It outlies the coast-line of Newfoundland from Cape Bonavista on the north-east round by Cape Race and along the south as far as the Ramea islands. It is practically one and the same plateau, although portions of it are designated by special names, as the St. Pierre Bank, the Green Bank, the Ballard Bank, and are separated by channels of somewhat deeper water. The usual depth over the Bank is

from 30 to 45 fathoms. On the southern edge it decreases to 22 fathoms, and at one point, not far from Cape Race, submarine reefs of small extent occur known as the "Virgin Rocks." Over the highest peak of this ridge the water shoals to 3 fathoms. These rocks are recognised, in heavy weather only, by the sea breaking over them. The Grand Bank is approximately 300 miles from north to south and 280 miles from east to west; its area is therefore equal to that of the whole island of Newfoundland.

Across this plateau in the spring and summer the Arctic current sweeps large numbers of icebergs in slow procession from the far north. These islands of floating ice are sometimes 100 feet high out of the water, and, as only one-eighth of their bulk is visible, they frequently ground in the shallower places. They all are of clear, clean ice and show no marks of carrying detritus of any kind. They are all of fresh water and in the cavities on their surfaces are ponds of fresh water. The sufferings, therefore, from thirst of the heroes of some recent romances who floated down south on bergs were unnecessary, and future novelists may deduct this from the doubtless extreme inconvenience of such a mode of travelling. During dense fogs these ice islands are a continual source of anxiety to the careful navigator to any port of British America or the northern United States, for fogs and icebergs are by no means limited to the Banks of Newfoundland. The bergs travel far south, and the Gulf Stream is everywhere fruitful in fogs which require only appropriate winds to waft them in any direction. The only drawback peculiar to the coasts north of Halifax is the field ice in spring.

Although, as described above, the two great rivers of the North Atlantic flow on their great courses, there are

many local currents, eddies, and indraughts well known to skilful sailors, and these are affected by the prevailing winds and by the tidal wave in the infinite diversity of circumstances which condition its progress and recession. All of these are laid down in charts and sailing directions compiled by highly skilled and scientific sailors, and will be found in publications specially issued for the use of mariners.





EXPLANATION
The Provinces and Territories are separated
by narrow dark red lines.

60° Longitude West of Greenwich

CHAPTER III

DOMINION OF CANADA

THE continent of North America is most conveniently considered in three divisions. The most southern, or Spanish, consists of Mexico and the other Spanish American republics (953,930 miles) and the colony of British Honduras (7562 miles), containing a total area of 961,492 square miles. The central consists of the United States proper (2,991,980 miles) and the Indian territories (31,000 miles), to which must be added Alaska (557,390 miles); for Alaska, though on the extreme north-western corner of the continent, is a territory of the United States, purchased from Russia in 1867—the aggregate area of this division is 3,580,370 square miles. The British, or northern division, consists of the Dominion of Canada and the island of Newfoundland, with the part of Labrador belonging to it, making a total area of 3,618,583 square miles. These figures are the most authentic available; but, as there are in all three divisions enormous areas of unsurveyed land, they must be taken as approximations. It would appear, however, that British America is the largest of the three. This immense region is all subject to the British Crown, save the small islands of St. Pierre and Miquelon, on the

south coast of Newfoundland, which belong to France. The present volume will be devoted exclusively to an exposition of the geography and resources of this last division. The extent of this region is within five per cent of the area of the entire continent of Europe, and as the aggregate area of the whole British Empire with its protectorates is 11,475,127 square miles, the North



CAPE RACE, NEWFOUNDLAND.

American possessions of the Crown are not far from one-third of the whole. At the farthest east the landmark is Cape Race—one-third of the distance across the Atlantic—the most salient headland of the continent, at long. $53^{\circ} 4' 20''$; and on the farthest west the gigantic mass of Mount St. Elias marks the limit of British rule as by a beacon 18,010 feet high at long. 141° W. Between these two points are eighty-eight degrees of longitude, almost one-fourth of the entire circuit of the globe; and, in latitude, from the parallels of 42° 45° and 49° Canada extends to the unknown regions of the Pole. Much of this territory is, no doubt, inhospitable; but there



Photo, taken at a distance of 65 miles,

MOUNT ST. ELIAS.

Topley, Photo.

is a belt, on an average 500 miles in width across the whole, available for settlement. The extreme distance from east to west being 3400 miles, there is, therefore, an area, roughly approximating, of 1,700,000 square miles, suitable to be the home of a settled, civilised, and prosperous people. This last area is as large as all Europe with the omission of Russia.

The colony of Newfoundland has not yet joined the confederation of British American colonies; and, as the Dominion of Canada is enormously the larger, it will be more convenient to commence with it and to dwell upon its more general characteristics before considering the separate provinces of which it is composed.

Boundaries

The boundaries of British America are, on the north, the Polar Ocean, and on the east the Atlantic Ocean, Davis Strait, Baffin Bay, and Smith Sound to the Arctic Sea. On the west the Alaskan boundary starts from Demarcation Point on the shore of the Arctic Ocean at long. 141° W. and follows that meridian southwards until it strikes the summit of the mountain range. This intersection occurs at Mount St. Elias, which is just within Canadian territory. So far the boundary is an astronomical one; and, as no previous survey exists and a meridian of longitude may be ascertained with scientific precision, the simplicity of, at least, that portion may easily be preserved; inasmuch, however, as some questions of interpretation have arisen and a joint scientific survey is now going on with a view to a more exact delimitation, it will be better to quote the precise words of the treaty of 1825 with Russia as to the remainder. They are as follows, beginning at the south:—

“Commencing from the southernmost point of the island called Prince of Wales Island, which point lies in the parallel of $54^{\circ} 40'$ north latitude and between the 131st and 133rd degree of west longitude, the said line shall ascend to the north, along the channel called Portland Channel, as far as the point of the continent where it strikes the 56th degree of north latitude; from this last mentioned point the line of demarcation shall follow the summit of the mountains situated parallel to the coast as far as the point of intersection of the 141st degree of west longitude.”

The 4th article further describes the line as follows:—

“Whenever the summit of the mountains, which extend in a direction parallel to the coast from the 56th degree of north latitude to the point of intersection of the 141st degree of west longitude, shall prove to be at the distance of more than ten marine leagues from the ocean, the limit between the British possessions and the line of coast which is to belong to Russia, as above mentioned, shall be formed by a line parallel to the windings of the coast, and which shall never exceed the distance of ten marine leagues therefrom.”

Prince of Wales Island belongs to Alaska, and the group of the Queen Charlotte Islands are a part of Canada.

The southern boundary of Canada is 3260 miles long, and is remarkable for many reasons, and, among others, because it won for its negotiator the thanks of the Imperial Parliament, and for the state of Maine so large a portion of Canadian territory as to have retarded for forty years the union of the British provinces. This most untoward result ought not, however, to be attributed to the American people, inasmuch as President Andrew Jackson, in 1835, offered a fair and equitable solution of

the questions in dispute. This was refused, and the golden hour of sweet reasonableness passed away never to return. The thanks of Parliament were equally due to many others who contributed to shape this boundary. Indeed, almost everybody seemed to have had a hand in it—provided he was not a Canadian—for the times of the Canadians had not then come.

The boundary between French Canada and the old colonies of England was well enough known to the *voyageurs* and borderers of old colony days. It was taken to be the water-parting between the streams falling into the Atlantic and those falling into the St. Lawrence river. The boundary between Acadia and the English colonies was supposed by the French to be the Penobscot and by the English to be the St. Croix. The general idea was that the boundary should be the water-parting of the streams flowing into the Bay of Fundy and those flowing into the main ocean. When, in 1783, England divided her possessions in America with her revolted colonies the treaty of peace was negotiated by Franklin, Jay, and Adams for the United States—all three perfectly acquainted with the question. The less that is said of the English negotiators the better—to say they did not know anything about the subject would be to say infinitely too little. The intention was clearly to reserve in their entirety Canada and Acadia to England. The treaty recognised the watershed of the Atlantic as distinct from that of the Bay of Fundy. It marked the termination of the Atlantic at the St. Croix river. Beyond that point was the Bay of Fundy. The natural division was simple—the St. Croix was to be the boundary of the United States on the east and the St. Lawrence watershed the boundary on the north. These natural features, however, are not conterminous, for the

drainage basin of the St. John, falling into the Bay of Fundy, runs round the head of the St. Croix and the water-parting between the St. Lawrence and the Atlantic does not extend so far east as a line due north from the head of the St. Croix. This fact was not known at that time, for the region was a wilderness and the maps were inaccurate; but the treaty is not difficult to read in the light of the knowledge of that period. The northern boundary was a fixed line, "the highlands which divide those rivers that empty themselves into the River St. Lawrence from those which fall into the Atlantic Ocean." The eastern boundary had also a natural object as a mark, to wit, the St. Croix river to its source, and a line was to be drawn from one to the other; but, unfortunately, the treaty said the line was to be a "north line," and a due north line from one to the other is not possible, for the termination of the highlands is not north but north-west from the source of the St. Croix. Hence the difficulty which arose.

The initial error was made by the commissioners of 1796, who made wider the angle of separation between the two landmarks of the treaty. They decided that the Schoodic, or west branch, was the true St. Croix, but, instead of following that up to its source in the Schoodic lakes, they followed up a tributary, the Chiputnaticook, to its source and erected a monument there. The subsequent negotiations started from the monument, and, by insisting on a direct north line, carried the boundary far beyond the other natural landmark, to wit, "the line of highlands which divides the waters flowing into the St. Lawrence from those flowing into the Atlantic," and brought it up to and along the river St. John, which flows neither into the St. Lawrence nor the Atlantic but into the Bay of Fundy, far east of the St.

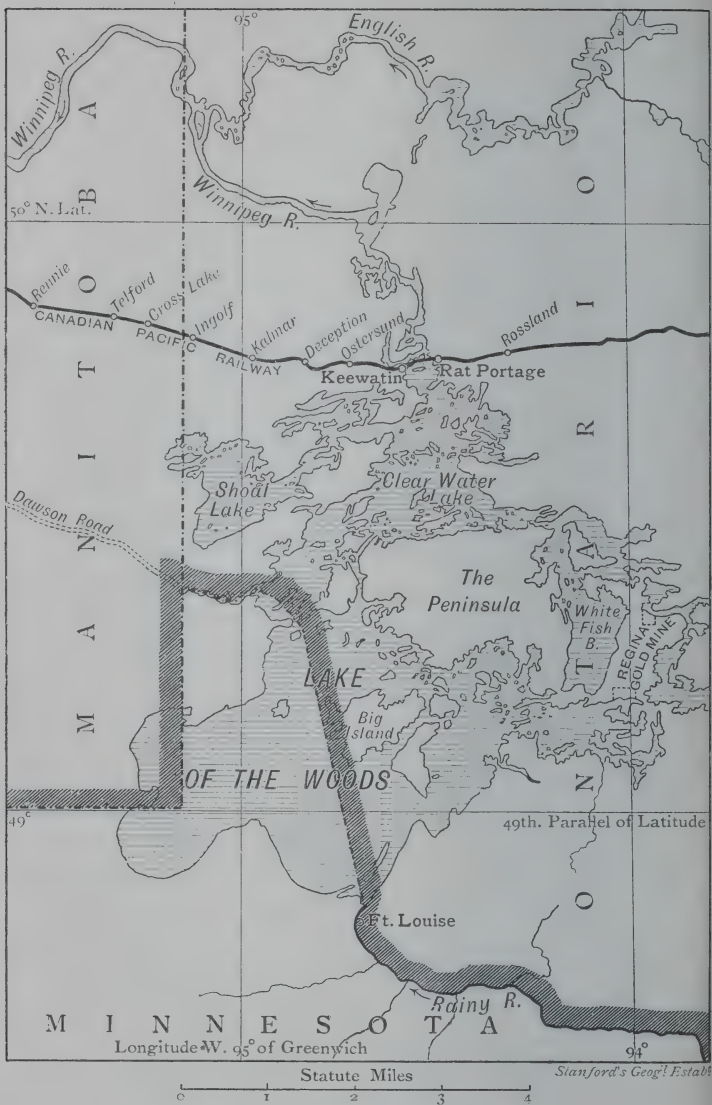
Croix. The erratic course of the present boundary proves by simple description that it was not the one intended, and this was demonstrated, after the signature of the treaty, by the production in the United States Senate of a map supposed to have been lost. This map had been sent, on December 6, 1782, by Franklin to the French Minister Vergennes, and he had marked upon it with a strong red line the boundary agreed upon, and known at the time to be the natural boundary. The historian, Sparks, who sent it from Paris to his government, pointed out that it established the British contention. His remarks when sending the map are conclusive: "In short, it is exactly the line now contended for by Great Britain, except that it concedes more than is claimed by her. It is evident that the line from the St. Croix to the Canadian highlands is intended to exclude all the waters running into the St. John."

This almost mortal wound in the frontier of Canada demands explanation even at the risk of tediousness, and the following description will indicate the eccentricities of the map. Starting from the misplaced monument, the line runs due north to the St. John river, and thence follows the St. John to the confluence of the St. Francis, which it follows still northward to the outlet of Lake Pohenagamook. From thence it strikes south-west across the country to a point on the north-west branch of the River St. John, thence south by west to the intersection of the parallel of $46^{\circ} 25'$ with the south-west branch of the River St. John. The line follows this branch to its source in the highlands which form the water-parting of the St. Lawrence, and then the highlands themselves, as far as a little river called Hall's stream, which it then follows as far as the parallel of 45° . The forty-fifth degree of north latitude was mentioned expressly in the

treaty of peace of 1783, but the true line of 45° was not followed.

It happened that certain land surveyors named Valentine and Collins had, previously to 1774, run a line of 45° north latitude along the frontier, and the United States government had built a very fine fort on a commanding point on Lake Champlain on the very edge of what they supposed to be their territory. It turned out, however, to be two miles north of the true line of 45° . The treaty of 1842 was therefore drawn so as to preserve that fort to the United States, and it defines the boundary as "the old line of boundary surveyed by Valentine and Collins previously to 1774 as the *forty-fifth degree* of north latitude" to the St. Lawrence river. At this point, therefore, the errors of Valentine and Collins have been perpetuated to form a second projection into Canada, but fortunately not a deep one.

The line of 45° intersects the St. Lawrence at St. Regis, and from thence, westwards, the boundary follows the mid-channel of the connecting rivers and the middle of the lakes. This part of the boundary was settled in 1822 by commissioners, but they did not get past the St. Mary's river near the Sault Ste. Marie. There a difficulty arose, and the delimitation was postponed, unfortunately, until 1842, for the Ashburton treaty. In this case the geography of the treaty of 1783 was far wrong. The boundary, as specified in the treaty of 1783, was to pass from Lake Superior through Long Lake to the north-west angle of Lake of the Woods, and thence to the Mississippi. But there is no Long Lake, and the source of the Mississippi is far south of Lake of the Woods. By the Ashburton treaty the line is carried, according to its real intention, along the Pigeon river, and the portages and



THE INTERNATIONAL BOUNDARY AT LAKE OF THE WOODS.

small lakes to Lake of the Woods. Then it runs north-west across the lake to a bay, whence it drops due south to the parallel of 49° , snipping off on the way a little promontory projecting from British territory. This projection into Canadian soil is indescribable without a map on a large scale. After this sortie into Canada the line does not go south into the United States to seek the source of the Mississippi, which also was expressly made a point in the treaty of 1783, but continues along the parallel of 49° to the Strait of Georgia, and thence by the Haro Channel to the Pacific Ocean. This part of the boundary is more particularly described in the chapter on British Columbia. One little projection, not visible save on a map of a very large scale, just large enough to be a foothold for impartial smugglers into both countries, is cut off here, and then the Haro Channel, of three navigable channels the nearest to Canada, is followed to the Strait of Juan de Fuca. Such is the southern boundary of Canada; the projections all point one way.

"It is," says Justin McCarthy, "an arrangement which has given mutual satisfaction ever since"; and in Miss Martineau's history it is naively recorded that "Lord Ashburton, after having been honoured throughout every step of his travels in the United States, received the thanks of Parliament on his return home."

Mr. McCarthy's "mutual" does not include the Canadians, and Lord Ashburton's travels did not extend to Canada.

Relief of the Land

The nucleus of the continent of North America is an enormous area of Azoic rocks, called Laurentian by the Geological Survey of Canada, because of their immense development north of the St. Lawrence. The name is

now accepted everywhere to denote the series of primitive crystalline rocks which probably underlie all formations.



They are found in detached areas in the state of New York and elsewhere in the United States, in the west of Scotland, in Scandinavia, in Bohemia, in Central and

Eastern Asia, and in South America; but nowhere else are there such extensive and continuous exposures of these rocks as in Canada. This Laurentian nucleus is V-shaped on the outer margin, and the remainder of the continent has grown upon it while still preserving the same angular shape. The later ranges of the Rocky Mountains and Appalachian chain run at the same angles, and the coast-lines run parallel to these, forming triangles within each other, based on the north and having their apexes to the south. The sketch shows in an approximate way the gradual growth of the continent as well as its Laurentian core, contained almost wholly within the Dominion of Canada.

Commencing in the far north-west of the continent, the outer edge of the Laurentian area skirts the valley of the Mackenzie river in almost its whole length. It commences near the Arctic coast and passes through Great Bear Lake, Great Slave Lake, and includes almost all of Lake Athabasca. The line then passes, still to the south-east, to the head of Lake Winnipeg, and includes the eastern shore of that lake. It includes the northern shore of Lake Superior, the northern part of the province of Ontario, and touches the St. Lawrence at the Thousand Islands, where it throws out across the river an outlier into the state of New York. The Thousand Islands are of this formation, and are the southern apex of the triangle; the line then turns away to the north-east, crosses the Ottawa and follows the general course of the St. Lawrence at varying distances, until it comes out on the Atlantic coast in Labrador. The whole of the Labrador peninsula is of this formation.

While it is quite true, speaking in a general way, to call this immense area Laurentian, there are within it large areas of more recent formation. On the margins

and throughout its extent are wide bands of Huronian rocks, a series generally metalliferous, so called from their great development on the north shore of Lake Huron. In the valleys of the rivers and on the plains of western Ontario are later formations, but behind all these the Laurentian formation forms the main mass.

This V-shaped nucleus is frequently described as the Laurentian mountains. The word is a little strong, because the height of the plateau is not more than from 1000 to 1600 feet above the sea. It is a country, several hundred miles wide, of rounded, weather-worn hills, densely wooded and abounding with lakes and streams. In remote geological ages these most ancient of all hills were doubtless high mountains, but they have been worn down to their present moderate height by the wear and tear of countless ages. Their outline is characteristic, and they bound the horizon with undulations rather than with peaks. The rivers have not cut deeply into these hard rocks. They flow with currents brimming between their banks, fed perennially by the highland streams which hurry down their clear and bright waters to the greater rivers. There is no malaria in the Laurentian country. Every brook may be drunk of with impunity, and the clearing up of new land generates no fevers. In the extreme east the mountains of Labrador attain in some places a height of 6000 feet, but the mountains further west become more like a hummocky plateau. The mountains on the Saguenay are 1500 to 1800 feet high, and Trembling Mountain, north of Montreal, rises to a height of 2380 feet. These are the highest summits of this formation near the settlements, and none higher are recorded in the territory to the north. When the height of land is reached the country slopes down to Hudson's Bay with a gentle descent, and, though the surface may



LAKE TEMISCAMINGUE—HEAD OF OTTAWA RIVER.
A typical Laurentian Scene.

be broken with rocks and streams, the portages from stream to stream are low.

Parallel to the coast-lines, on both oceans, two great mountain systems preserve the original type of the continent; the ranges of the Pacific Cordillera running north-west and south-east, and the Appalachian ranges running north-east and south-west. These are both of later date than the Laurentian plateau, and rise to a much greater height. The mountains on the Pacific coast will be described in the chapter on British Columbia. The Appalachian ranges on the Atlantic side cross into Canada from the states of Vermont and New Hampshire, where they are known as the White and Green mountains. They cross the south-eastern corner of the province of Quebec with a much lower elevation until they strike the St. Lawrence where, under the name of the Notre Dame mountains, they follow down the shore into the Gaspé peninsula and form a table-land of an average height of 1500 feet. Here they are known as the Shickshock mountains, and rise to elevations of 3000 to 4000 feet. Where these mountains cross the eastern townships of Quebec they make a rolling hilly country, suitable for agriculture and pasturing; but the interior of Gaspé is a rough mountain plateau unfit for cultivation.

The maritime provinces of the Dominion form a group by themselves and belong to the Appalachian system. A range of hills runs from Cape Chignecto on the Bay of Fundy to the north-east point of Nova Scotia, and is continued, through Cape Breton Island, to its extreme point at Cape North; but their elevation is not greater than 1200 feet. In New Brunswick two ranges of hills from 500 to 1000 feet high diverge from the south-west corner of the province. One runs up in a north-east direction to the Bay Chaleur, and the other is a lower hilly tract, with

no conspicuous peaks, running in the general direction of the shore of the Bay of Fundy. These may all be considered as outliers of the Appalachians. The province of Prince Edward Island is a gently undulating country—a garden land where rock or stone can seldom be seen. All the Maritime provinces lie outside of the Laurentian nucleus.

The Dominion of Canada, then, presents to the east the Atlantic provinces with a rocky coast-line and an interior contour diversified with mountain and river and farm land. The provinces of old Canada form the basin of the St. Lawrence—in Quebec a broad and rich valley between mountain ranges—in Ontario a broad plain from Lake Ontario to the Laurentian hills and a fertile peninsula inclosed by three great lakes. This passes into the broken Laurentian region north of lakes Huron and Superior. Then commences the great interior Cretaceous plain stretching to the Rocky Mountains and the Polar Sea: and, lastly, the mountain region of British Columbia.

Hydrography

The history of Canada is explicable only by its waterways. There is nothing which so impresses the mind of an intelligent traveller as the prodigality with which Nature has endowed the Dominion of Canada with one of her choicest gifts. It is above all others the land of abundance of water. Thousands of miles of deeply indented sea-board extend along the Atlantic and thousands along the Pacific with harbours on both oceans unrivalled in the world. Both oceans search far into the land—the Gulf of St. Lawrence on the east, and the Strait of Georgia, with the deep fiords of British Columbia, on the west, and on the north the great ocean expanse of Hudson's Bay.

It is a country of broad lakes and flowing waters. A country where the abundance of streams and the regularity of summer rains preclude the possibility of drought, and secure the widest area of vegetable growth. A land of grass and forest. A country containing by far the larger portion of all the fresh water of the globe, where 2000 miles from the ocean the traveller may lose sight of land and be prostrated by sea-sickness, and where thrilling adventures and shipwrecks may occur in mid-continent—in the very heart of North America at its widest expansion.

This description applies more especially to the great central provinces; but New Brunswick has a most extensive river system of its own and, for Nova Scotia and Prince Edward Island, the Atlantic Ocean and the Gulf of St. Lawrence are the waterways. While mountains and a deeply indented coast-line are the peculiar characteristics of the Pacific province, Canada proper, or old Canada, contains the most extensive system of interior waterways in the world, and such breaks as occur in their continuous navigation are overcome by a series of canals; so that, with only one transshipment at Montreal, freight from the largest ocean steamships may be carried to the head of Lake Superior 2384 miles from the Strait of Belle-isle.

Four great basins divide the greater part of the interior of the Dominion. The St. Lawrence basin, the Hudson's Bay basin, the Winnipeg sub-basin tributary to Hudson's Bay, and the Mackenzie basin. These are separated by low water-partings, and the heads of their dependent streams interlock in many places, so that the whole continent lay open to the early explorers, and adventurous *voyageurs* searched it out to its remotest recesses.

The Hudson's Bay Basin

The climatic and physical conditions of the country around Hudson's Bay differ so much from those of the rest of Canada that they must be considered in a separate chapter; nevertheless, as the great Laurentian V-shaped plateau has been shown to be the nucleus of the continent, so Hudson's Bay, which occupies the interior of the plateau, is, geographically, a most important feature of the Dominion. South and south-east of it stretches the St. Lawrence basin, to the south-west the sub-basin of the Winnipeg system, and to the west the basin of the Mackenzie. No considerable height of land separates them, and where they touch it is easy to pass from one to another.

The interior of the Laurentian nucleus is occupied by the inland salt-water sea of Hudson's Bay, and its outward edge is encircled by a succession of immense inland expanses of fresh water, extending from the Great Bear Lake in the Polar circle on the west, round by the south. On the east the Laurentian plateau touches the River St. Lawrence nearly at the point where the water becomes salt, and follows the lower St. Lawrence and the Gulf to the Atlantic at the Strait of Belle-isle. The water-parting of the Hudson's Bay basin is far within the Laurentian plateau, and is not marked by bold highlands, but near it on both sides is an inner circle of smaller lakes or lake-like expanses of the streams.

The estimated areas of the greater hydrographic basins of central Canada are as follows:—

Winnipeg sub-basin in Canada	. . .	367,000 square miles
Mackenzie River basin	. . .	677,000 „ „
St. Lawrence basin	. . .	530,000 „ „

The area of the drainage basin of Hudson's Bay is difficult to estimate with approximate accuracy, so much of it lies in the unknown north.

The hydrography of the Pacific province is distinct from these, as well as the hydrography of the maritime provinces and that part of Labrador which drains into the Atlantic and Hudson's Strait. There is also in the far north a smaller watershed, draining into the Arctic Ocean by the Great Fish and Coppermine rivers, and in the far north-west another region tributary to the Yukon. These are the subjects of separate chapters.

St. Lawrence Basin

The area drained by the St. Lawrence is estimated at 530,000 square miles; of which 460,000 are in Canada. It is essentially a northern river; for all its large tributaries fall in from the north. It flows on the southern side of its drainage basin, and lakes Champlain and George, and their outlet, the River Richelieu, are the only important contribution it receives from the south. The River St. Louis, which falls in at the head of Lake Superior, close to Duluth, in Minnesota, is taken as its source, and it widens out into the most remarkable sequence of ocean-like lakes in the world. It is known by various names throughout its course—the River St. Mary, the outlet of Lake Superior; the St. Clair river, from Lake Huron to Lake St. Clair; the Detroit river from Lake St. Clair to Lake Erie. The outlet of Lake Erie is the Niagara river, and it is only from the outlet of Lake Ontario that it is called the St. Lawrence—to the older French writers it was also known as the Cataraqui. The total length of navigation to Port Arthur, in Ontario, from the open ocean at the Strait of Belle-isle is 2264 miles.

As far as Montreal, 986 miles are navigable for the largest ocean steamships. A few miles above Montreal is the Sault St. Louis, or Lachine rapids, the first break from the ocean. This, and all subsequent impediments, are overcome by a series of magnificent canals with an aggregate length of 71 miles, so that steamers 200 feet long and drawing 9 feet may pass up the whole distance, 1278 miles, from Montreal to Port Arthur on Lake Superior. Duluth, at the head of the lake, is 124 miles farther. The canals are being deepened to 14 feet throughout the whole series.

The width of the St. Lawrence varies very much, for, besides the immense expansions of the upper lakes, it widens into Lake St. Francis (5 miles), St. Louis (7 miles), and St. Peter (9 miles), on its course north-east from Lake Ontario. The average width of the river proper is about a mile and three-quarters, and the narrowest point on its whole course is at Cape Rouge, a few miles above Quebec. Below Quebec it widens to 20 and 30 miles, and across its mouth at the west point at Anticosti, where it is considered to end, the distance is 100 miles.

The lakes of the St. Lawrence system, as before stated, contain more than one-half the fresh water of the globe. The water in them is clear and bright, for they are the gigantic settling basins of the upper streams. At Three Rivers, half-way between Montreal and Quebec, the influence of the tide ceases; about 30 miles below Quebec the water becomes brackish, and at the mouth of the Saguenay it is salt. The aggregate area of these fresh-water seas is 98,510 square miles, and the total fall, from Lake Superior to tide water at Three Rivers, is 602 feet, half of which is in the Niagara river. The St. Lawrence is thus a broad and deep

avenue to the very heart of North America; for the central point of the continent is only 250 miles in a straight line west of the head of Lake Superior. No wonder the early French explorers were continually dreaming of a passage to China.

The dimensions of the chief lakes of the St. Lawrence system are given below; Lake Michigan is included though wholly in the United States. The strait of Mackinaw connects it with Lake Huron.

TABLE OF ST. LAWRENCE LAKES

Lakes.	Statute miles.		Square miles.		Feet.	Feet.
	Length.	Average breadth.	Area.	Average depth.	Average depth.	Height above sea.
Superior . . .	420	80	31,420	900		602
Michigan . . .	345	58	25,590	1000		578
Huron	400	70	23,780	500		576
St. Clair . . .	25	20	360	15		570
Erie	250	38	10,030	90		566
Ontario	190	40	7330	412		240
St. Francis . .	38	4	132	36		142
St. Louis . . .	15	5	75	30		58
St. Peter . . .	30	7	200	8		0
St. John	28	20	366	3 to 50		278
Nepigon	70	40	1450	over 540		665
Simcoe	30	18	300	...		701
Temiscamingue .	75	1 to 10	113	deep		612

It will be seen by the above table that the bottoms of some of the great lakes are below the sea level, and the surface of the highest is only 600 feet above the sea. This great system of waterways is like an arm of the ocean itself.

The river system tributary to the St. Lawrence is remarkable for the length and number of its streams. As before stated the river flows on the southern edge of its basin, and all the great tributaries are from the north. It is a Canadian river, for seven-eighths of its drainage is on

Canadian soil. It will be impossible even to mention more than a very few of the tributaries of this immense system. They will be treated of more in detail in the chapters on the separate provinces to which they belong.

Commencing on the north it must be noted that the central plateau of Labrador is on an average 1800 feet high, and not far distant from the shores of the gulf. The rivers are very numerous but are not navigable; for many falls and rapids are necessary before the level of the sea is reached. Almost the longest is the Manicouagan, a rapid stream falling into the river St. Lawrence west of Point de Monts. Its source is a lake with a double outflow—one by the Koksoak river to the north into Hudson's Strait, and the other to the south in a course of 224 miles, with short reaches of lake, and with much broken water. The Outarde, which falls in near it, is 234 miles long. Further west is the Saguenay, a profound and gloomy stream like a Norway fiord, flanked by precipitous cliffs. The largest man-of-war may steam up for sixty miles between the mountains on its shores. At Chicoutimi (71 miles) navigation is interrupted by rapids. The Saguenay is the outlet of Lake St. John, a lake 28 miles by 20, almost a circular basin, which collects the water of several large streams. The Ashouapmouchouan, one of its tributaries, leads up to the portage to Lake Mistassini from whence Rupert's river flows into Hudson's Bay. The length of the Saguenay from the outlet of Lake St. John is 112 miles. Father Albanel was the first white man to explore this route when, in 1672, he followed it to Hudson's Bay.

The Ottawa is the most important tributary to the St. Lawrence. It drains an area of 80,000 square miles, and its total length is 780 miles. The city of Montreal is built on an island, formed at its confluence with the

St. Lawrence where, flowing in from the west, it strikes with its darker water the clear flood of the larger river flowing in an acute angle from the south-west. The waters do not mingle, but flow side by side until they reach the tide. Navigation on the lower Ottawa is obstructed by the St. Anne's rapids and the rapids of the Long Sault at Carillon. These are overcome by short canals, and steamers may go up as far as Ottawa city where the falls of the Chaudière bar further progress. There are, however, steamers on all the upper reaches of the river. The Ottawa was the fur-trader's route to the great west. In 1615 Champlain went up the Ottawa and followed the Mattawa, one of its tributaries, to Lake Nipissing. From thence he passed down French river into Lake Huron, and wintered there with the Hurons. A ship canal has been projected to follow the same route and so cut off the peninsula of south-west Ontario. Such a canal would lie on a direct east and west line from the junction of three great lakes at the Strait of Mackinaw and would save 570 miles of navigation. In 1686 the Chevalier de Troyes led an expedition up the Ottawa to capture the English forts on Hudson's Bay. He passed up by the short portage leading to Lake Abitibi which discharges into Hudson's Bay by a river of the same name.

The most important of the tributaries to Lake Ontario, from the north, is the river Trent, which opens up a world of lakes in the heart of that province. In 1616 Champlain came down with a great Huron war party from Lake Huron by the river Severn, and Lake Simcoe, and over the portage to the river Trent, into Lake Ontario. This route is now being improved, for modern business, by canals and dams. There are no rivers of importance on the northern shores of Lakes Huron and Superior, because

the water-parting of Hudson's Bay approaches very close to their shores. At Michipicoton is the main route for the Moose river, and at Nepigon is the route for the Albany river—both large rivers falling into Hudson's Bay. Their head waters are close to the lake, and the portages to these waters have been used from the early times of the fur companies.

Returning now to the east and following the south shore of the St. Lawrence, the tributaries are comparatively small; but they are important because they open up adjacent river systems to the south. At Rivière du Loup the head waters of the St. John are only 25 miles distant, and the old route of the war parties of the Mohawks was from there to the Madawaska. The Chaudière river, falling in near Quebec, rises close to the head waters of the Kennebec, and by that route Arnold came in 1775 from Maine to besiege Quebec. The Richelieu river was called, in the early French days, the *Rivière aux Iroquois*, for it was the track of their invasions. The Richelieu is navigable for large vessels from St. Johns to the head of Lake Champlain. A canal, 12 miles long, overcomes the rapids and completes the navigation from the St. Lawrence to Whitehall, in the state of New York, at the head of the lake. The Richelieu discharges the water of Lakes George and Champlain, and down its valley swept the tides of invasion to and fro in the wars of old colony days. Crown Point and Ticonderoga were the French fortresses, and Fort William Henry, and Fort Edward the chief English defences. The head waters of the Hudson are very close to those of the Richelieu, and they are connected by a canal. There was the most vulnerable point both of the English and French provinces, and nearly every headland and stream have romantic historic memories. Fenimore Cooper has made this

region, as well as the route by the Mohawk River to Oswego, classic by his "Leather Stocking Tales."

Further west, from the south shore of Lake Erie the whole valley of the Ohio lay open from the St. Lawrence. At Presqu'isle, on the site of the present city of Erie, the head waters of the Alleghany river approach the shores of the lake, and from this river the French had a line of forts to the present Pittsburg, Fort Duquesne. This is the region of Braddock's defeat, and of Washington's early services for the king. Where Toledo is now built the Miami river leads to the head waters of the Wabash which falls into the Ohio, and that was another favourite route of the French.

From Lake Michigan the upper Mississippi lay open: for at Chicago the Des Plaines river approaches so close to the lake shore, and the divide is so low that it is proposed to carry the city drainage, not into the lake, but into the Mississippi. By that route, in 1682, La Salle led his followers and, first of white men, traced the great Mississippi to the Gulf of Mexico, and took possession for the king of France of that magnificent valley now the centre of the power of the United States. At the foot of Green Bay, on the west side of the lake, the Fox river falls in, from whose head waters a portage of a mile and a half leads to the Wisconsin river. In 1673, by this route, Louis Jolliet and Father Marquette reached the Mississippi and followed it as far as the Arkansas.

These are the main portage routes, and they show how the St. Lawrence valley cuts all the communications of the interior of the continent with a transverse band of deep and navigable water and, although railways have to a great extent superseded waterways, these facts are yet necessary to elucidate the history of America and show how it was possible for the small population of New

France to keep the English Colonies in check for so many years. The settlements of the English colonists were taken in rear, where they were weak and straggling, and the incursions of the French and their Indian allies retarded for a long time the advancing line of settlers westwards.

At the western end of the St. Lawrence basin commences the Winnipeg basin and stretches to the Rocky Mountains. It is, as has been previously shown, in reality a sub-basin ultimately tributary to Hudson's Bay. A low and uncertain water-parting separates it on the north from the Mackenzie river system; so that to Hudson's Bay and to the Arctic Ocean the fur companies had several ways of ready access. In the same manner to the south, the head waters of Red river lie far south of the source of the Mississippi, and the divide is so low that in the glacial period the whole outflow of the Winnipeg basin was by the Mississippi. Further west the Souris river, a tributary of the Assiniboine, affords access to the Missouri, and, indeed, the basin of the Missouri enters Assiniboia and the main river itself flows close to the boundary of 49° . It was by the Souris that the Sioux used to send their war parties into the Cree country, and the River Assiniboine means "River of the Stony Sioux"—a tribe of the Dakota nation. The Winnipeg basin continues to the Rocky Mountains the function of the St. Lawrence in the east, of intervening between the great southern and northern watersheds of the continent and of supplying a key to both.

These two basins, thus traversing the water systems of the continent, are not continuous; for the height of land of the Hudson's Bay basin follows the north shore of Lake Superior at no great distance, turns to the south at the head of the lake and reaches south, within the

United States, to gather in the waters of Red river. To pass from Lake Superior into the Winnipeg basin it is therefore necessary to cross this height of land, which is from 1500 to 1600 feet above the sea level, and as the watershed on the St. Lawrence side is narrow, the way is rough and many falls and rapids have to be overcome.

The country between Lake Superior and Lake Winnipeg is a tangle of forests and lakes and swift flowing streams—a wilderness of rock and morass and foaming rapids and precipitous waterfalls. It is the summit level of four great watersheds. To the north-east the Albany river drains directly into Hudson's Bay; to the west the Lake of the Woods collects the waters of innumerable streams to pour them down by the Winnipeg river into Lake Winnipeg; to the east are the streams flowing into Lake Superior; and not far away across the border, in Minnesota to the south, the head waters of the Mississippi begin to form the great river which pours its flood into the tropical basin of the Gulf of Mexico. It was without roads and without settlements until ten years ago, and now the busy town of Rat Portage at the outlet of the Lake of the Woods is a centre of business activity where there are immense lumber and flouring mills. This region is the centre of great mining enterprises which have opened and are still opening up valuable mines of gold of which more will shortly be heard. A long belt of good farm land runs along the north shore of Rainy river, but the country generally can never be other than a mining and lumbering region.

The great hydrographical feature of this country is the Lake of the Woods. It is the pivot of that great circle of lakes stretching down the St. Lawrence and sweeping up past the Arctic circle to Great Bear Lake.

It is 70 miles long and 60 wide; but its outline is indented to an extraordinary degree, and its northern portion is filled with islands. The water area is given as 1500 square miles. The lake drains a basin of 36,000 square miles. Its main tributary is Rainy river, a noble stream flowing from Rainy Lake. Steamers and steam-tugs ply over it and, if the lock at Fort Frances were completed, there would be a continuous navigation for steamers through Rainy Lake and river and Lake of the Woods for 250 miles. At the northern corner of Lake of the Woods is Rat Portage where the Winnipeg river commences its swift career and, through falls and rapids, drops 300 feet in a comparatively short distance.

No roads ran through this territory, but two great water routes were used in former years. One is now the line of the international boundary and was called the Grand Portage; and Grand Portage Bay, still on the maps, marks its eastern end. The other commenced at Thunder Bay, and was used by the French fur-traders and adopted by the North-west and Hudson's Bay Companies. By the Grand Portage it is only 60 miles to the height of land. The route is by Pigeon river and through a succession of lakes to South Lake 1535 feet above the sea or 935 feet above Lake Superior. Many laborious portages have to be made to overcome falls and rapids, but the distance across the summit to North Lake is very short. The descent is also laborious, through many lakes by Rainy Lake and Rainy river to Lake of the Woods. The fall from the summit to Lake of the Woods, which is 1057 feet above the sea, is 516 feet. The remainder of the fall to the level of Lake Winnipeg (347 feet) is by a series of falls and rapids on the turbulent Winnipeg river in its course of 163 miles.

The fur-trader's route to Lake of the Woods from Fort

William on Thunder Bay was the one adopted by Colonel Wolseley in his expedition to Red River, with the difference that the old canoe route went up the Kaministiquia into Dog Lake, and up Dog river to the height of land. He led his force of 1048 men up the Kaministiquia and the Matawin rivers into Lake Shebandowan, and crossed the summit almost at the shore of Lac des Mille Lacs. From thence he followed the old canoe route, by way of Sturgeon Lake and river, into Rainy Lake, and thence by Rainy river into the Lake of the Woods. The divide is 1570 feet high, about the same as on the other route, but the main lift is in the 48 miles from Lake Superior to Lake Shebandowan, which is 800 feet above it and close to the summit portage. At Lake La Croix both routes unite and pass by way of Rainy Lake into Lake of the Woods—the central basin.

It will thus be seen that a dividing ridge 1000 feet high separates the navigable water of Lake Superior from Lake Winnipeg, and that the whole band of intervening country is studded with lakes and streams. The distance is 400 miles, and no doubt the long stretches of quiet water would have been utilised before now in some system of communication had not the Canadian Pacific Railway intervened to make the required connection. The days when the old fur-traders kept high state at Fort William, and when these lonely river reaches were vocal with the songs of the *voyageurs* are gone; but the town of Rat Portage is stirring with active enterprise, and the railway has become the link between the two great transverse basins of the continent.

The St. Lawrence river basin has been described here because it extends throughout the whole of old Canada and cannot be treated of excepting as a whole. The other hydrographic basins fall conveniently into other chapters—

METEOROLOGICAL MAP OF CANADA.



the Winnipeg system into the chapter on Manitoba and the North-west, the Mackenzie valley in the chapter on the Mackenzie district, the Hudson's Bay, the Yukon, and the Arctic in their respective chapters. The object of this section is to show the paramount importance of the St. Lawrence valley as the key to the whole inner continent. In the far west of Canada there is a place with a radius of not many miles where rise the sources of the Saskatchewan flowing east, the Mackenzie flowing north, the Missouri flowing south-east, the Columbia flowing south-west, and the Fraser flowing west. This is the critical geographical point of Dr. Oliver Wendell Holmes's poem, *The Two Streams*, from whence he has drawn a deep moral lesson.

Yon stream whose sources run
Turned by a pebble's edge
Is Athabasca rolling toward the sun
Through the cleft mountain-ledge.

The slender rill had strayed,
But for the slanting stone,
To evening's ocean, with the tangled braid
Of foam-flecked Oregon.

So from the heights of will
Life's parting stream descends.
And, as a moment turns its slender rill,
Each widening torrent bends.

From the same cradle's side,
From the same mother's knee,
One to long darkness and the frozen tide,
One to the Peaceful Sea.

Climate

In a previous chapter it has been shown that the Arctic current, in its south-western course, lowers the

temperature along the north-east coast of the American continent, and that parallel geographical conditions existing in the Pacific Ocean elevate the temperature along the north-west coast; of necessity, therefore, the isothermal lines cross the continent in a north-west direction. The meteorological charts of Dr. Buchan in the *Challenger Report* show a line of mean January temperature of $+15^{\circ}$ Fahrenheit alike at Halifax in lat. 45° as in Alaska at lat. 62° , and the mean temperature of the year is shown to be nearly 45° at Montreal, not far from lat. 45° N., and in Alaska at lat. 56° . The mean temperature of 70° in July in like manner is shown to extend from Montreal to lat. 55° in the far west. These figures are approximately correct; the scale of the maps is too small to show minor differences, but the main proposition is confirmed that there are across the continent lines of equal summer and of equal winter temperature as well as a line of equal annual temperature extending north-westwardly through fifteen degrees of latitude. In central Canada these lines bend in waves of greater or less amplitude according to local circumstances and as affected by great bodies of water, or by such influences as the Chinook winds, but the general result is that spring opens as early on the Upper Peace river in lat. 56° as at Montreal in lat. $45^{\circ} 30'$, and the seeding time is actually earlier.

The map annexed is compiled by the Meteorological Service of Canada, and is the resultant of all recorded observations to the present time. It shows the mean annual isotherms and the total annual precipitation in inches reduced to terms of rain.

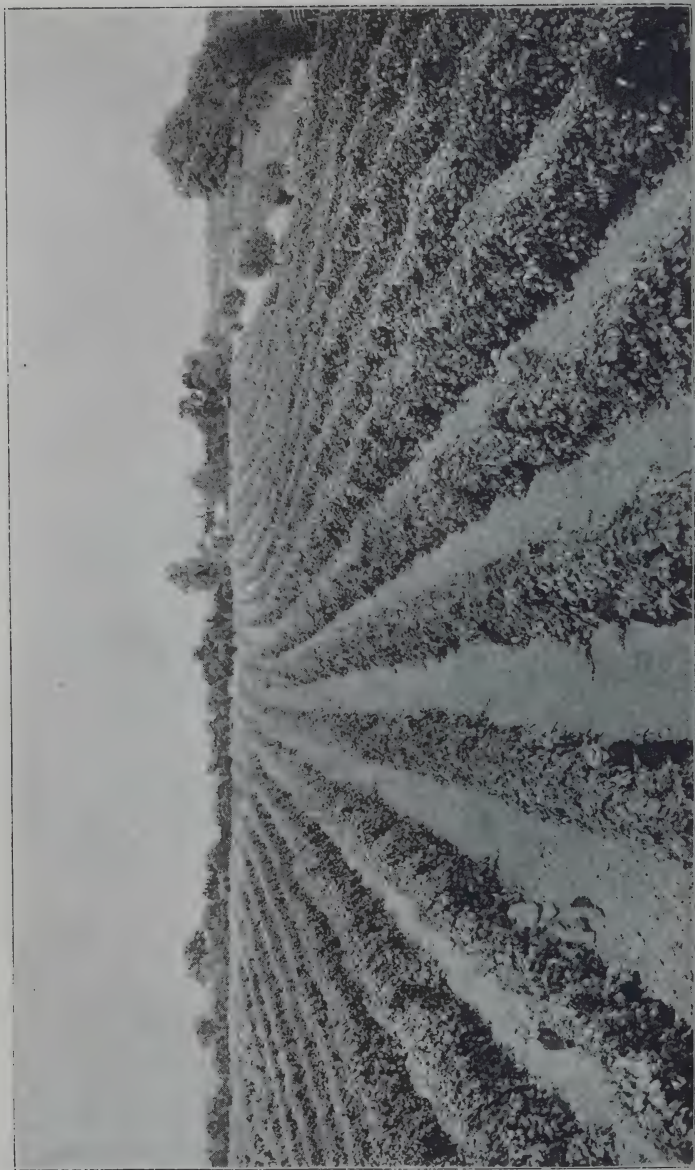
In treating of the several provinces of Canada it will be necessary to recur frequently to the question of climate as it is affected by the different physical circumstances of

each. Many false ideas of the climate have been rooted in the minds of Europeans by the exuberant vitality of the promoters of winter carnivals, who, in their anxiety to show the pleasures of open air life in winter, have disseminated views of ice-palaces and such like things until the name of Canada has in many minds become



CROP OF MAIZE—NEAR OTTAWA.

indissolubly associated with ice and snow. It will, however, assist the reader to form a truer conception of the climate of Canada if he will remember that maize, which cannot be grown as a crop in any part of England, is a staple crop throughout Ontario and Quebec. Above is a reproduction of a photograph taken at the Central Experimental Farm at Ottawa. The luxuriance of the growth is shown by its proportion beyond the height of



a man of more than average stature standing in contact with the plants. Neither melons nor tomatoes are grown as crops in England, but they are extensively grown in Canada. In many parts of Canada grapes are grown in the open air. The illustration opposite is from a photograph of a large vineyard near Ottawa. In the more southern part of Ontario grapes are extensively grown for the manufacture of wine, and the business of grape-growing and wine-making has increased very rapidly during the last few years, as may be seen in the chapter on the province of Ontario. In the same province peach-growing gives a livelihood to a number of people. There is nothing wonderful or exceptional about this, for the Huron-Iroquois Indians cultivated maize, pumpkins, and tobacco on the site of Montreal and north of Toronto on the shores of Lake Huron, before the arrival of the whites. In the region west of Nottawasaga Bay, Champlain in 1616 visited a nation of sedentary Indians, who, because of their extensive crops of tobacco, were known as the Tobacco Nation—*Nation du Petun*; but a crop of tobacco can not be grown in England. All of England is north of 50° north latitude and southern Ontario is in the latitude of Rome. The agricultural productions of a country do not, however, depend entirely upon latitude, but rather upon the degree of the summer isotherms. Melons, maize, pumpkins, beans, and tomatoes are crops in Manitoba, and may be grown even in lat. 53° , on the North Saskatchewan.

These facts are also manifest by the high latitudes in which wheat is grown. It is not suggested that settlers should take up land on Lake Athabasca while millions upon millions of vacant wheatlands are waiting to be tilled in Manitoba and the southern territories of the North-west. These more northern lands are the reserves

of Canada, to come into use when the other provinces are filled up. It is true, nevertheless, that wheat has been grown for one hundred years at Dunvegan on the Peace river in lat. 56° , and that wheat grown at Fort Chipewyan in lat. 58° took a prize at the Centennial Exhibition.

The climate of Canada is continental—one of cold winters and warm summers. The average temperature of July is the same, 70° Fahr., at Battleford on the North Saskatchewan, at Montreal on the St. Lawrence, in the Biscayan provinces of Spain, and throughout the plains of Lombardy in Italy; but the winter temperatures are the same as those of Stockholm in Sweden, or of Riga on the Baltic. It is impossible, however, to generalise upon the climate of Canada, for the conditions vary over so immense an area. South-west Ontario is a wine-growing country, and grapes and peaches are staple fruit crops, while on the Arctic coast vegetation fades out altogether. It will therefore be better to refer questions of temperature to the chapters on the separate provinces. From the winter climate of the south of England to the Arctic night of the Polar circle is a wide range.

Rainfall

Concerning the rainfall in Canada little need be said. The hydrography proves that there can be no deficiency in precipitation, for the innumerable lakes and streams are constantly full. There is very little difference in this respect between Canada and the countries of the centre and north of Europe lying in the same latitudes. In Assiniboia what is called the American desert projects north of the boundary over an area of 20,000 square miles, and in the ranching region of southern Alberta, while

there is rain enough for grass, irrigation is necessary to secure farming crops with certainty. There are dry belts under the lee of the mountain ranges of British Columbia, and a belt of excessive moisture on the Pacific coast, but Canada is a country of abundance of water. Grass land and forest cover it from one ocean to the other, and follow the Mackenzie northwards to its mouth on the Arctic Sea. The immense areas of water in the great central lakes modify the climate by imparting humidity to the air and moderating those extremes of a continental climate which are developed in the centre of northern Asia. In this respect the immense inland sea of Hudson's Bay is of great benefit in preventing the aridity which obtains on the plains to the south of the boundary line.

Forest

It results, from the hydrographic and climatic conditions before recited, that Canada is a land of forest. At its discovery one dense continuous forest covered it from the Atlantic to Lake Winnipeg; and, north of the great prairies, the sub-arctic forest still sweeps round until the head waters of the great western rivers are reached, when the British Columbia forest stretches southward and westward to the Pacific. All the settled parts of old Canada and the maritime provinces have been wrested from the forest, and the rivers were the roads and lanes through the sylvan wilderness, penetrating into its darkest recesses with threads of silver. In summer the *voyageur's* canoe, and in winter the *habitant's* sleigh made the mesh of waterways available for locomotion long before the settler had time or means to build roads or bridges.

What is known as the sub-arctic forest is a continuous tract of woodland extending across the continent as far

as the Rocky Mountains. The line of its northern limit starts at about lat. 56° in Labrador, and passes near Churchill on the west coast of Hudson's Bay; thence it proceeds in a north-west direction to the shore of the Polar Sea at the mouth of the Mackenzie river. To the north-east of this line is the region known as the Barren Lands. The sub-arctic forest region varies in width, but it may be approximately given as from 200 to 300 miles, and this width across the continent would make its area about 1,000,000 square miles. At its southern limit the coniferous trees of the sub-arctic forest gradually change into the aspen forests of the North-west Territories, and the mixed forests of old Canada and the maritime provinces. The coniferous trees extend down along the Atlantic coast-line under the cooler and moister conditions there existing; but, in the interior, the forest is made up chiefly of hardwood trees and of the more valuable pines.

The sub-arctic forest, east of the Mackenzie, according to Professor Macoun, is made up almost exclusively of only eight species:—

<i>Pinus Banksiana</i>	. . . . .	Scrub pine.
<i>Picea alba</i>	. . . . .	White spruce.
<i>Picea nigra</i>	. . . . .	Black spruce.
<i>Larix Americana</i>	. . . . .	Tamarack, larch.
<i>Populus tremuloides</i>	. . . . .	Aspen.
<i>Populus balsamifera</i>	. . . . .	Balsam poplar.
<i>Betula papyrifera</i>	. . . . .	Paper or canoe birch.
<i>Abies balsamea</i>	. . . . .	Canada balsam fir.

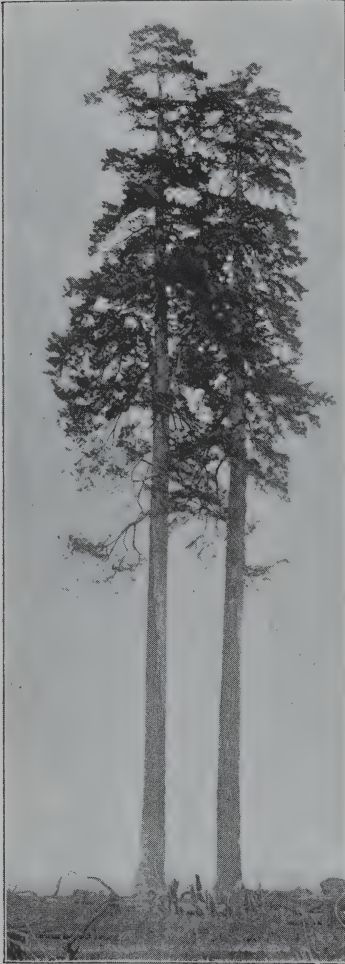
The four first of these trees are the most characteristic, and they are the last to disappear on the barren grounds at the north. They are not dwarfed, but retain their size and importance to the last, only withdrawing from the colder and wetter ground and occupying dryer and warmer oases of soil at their extreme northern limit. The trees change their character also. Thus the Banksian pine

along the northern shore of Lake Superior increases in size, and in Athabasca attains a height of 100 feet and a diameter of 24 inches. In the same manner the aspen, of small account in the east, becomes in the west an important tree. The forest of the Peace river valley is composed of spruce and aspen, and this latter tree it is which touches the edge of the prairies, making the oases of woodland on the western plains, and penetrating the coniferous forest at the north. It occupies dry situations, and is considered to be an indication of good soil. The region of aspen forest extends from Winnipeg to Edmonton, a distance of 900 miles on a breadth of 50 miles, or over an area of 45,000 square miles. Balsam poplar also becomes a very large tree on the Mackenzie river and its larger tributaries. This and the white spruce are the characteristic trees of the Mackenzie valley, and attain a diameter of four feet and over. On the other hand, it is in the forests of Eastern Canada that the paper birch reaches its highest perfection. It is a much poorer tree on the Pacific coast.

South of the sub-arctic forest appear the forests characteristic of the different provinces. The province of British Columbia has a forest growth peculiarly its own. In the humid coast region the Douglas fir (*Pseudotsuga Douglasii*) attains a height of 300 feet and a diameter of from ten to twelve feet, and the western cedar (*Thuja gigantea*) reaches even to greater proportions. Ninety-five per cent of the Rocky Mountain forest is made up of five species—Engelmann's spruce, black pine (*Pinus Murrayana*), white spruce, Douglas fir, and balsam fir. East of the mountains is the belt of poplar forest, a connecting link with the forests of eastern Canada.

In the mild climate and rich soil of southern Ontario

is a different forest growth. There the predominant



DOUGLAS FIRS, NEAR VANCOUVER, B. C.

trees are the oaks and the hickories, and the chestnut, buttonwood, and tulip trees. In eastern Ontario and throughout Quebec, south of the Hudson's Bay water-parting, the characteristic trees are the maples, beeches, birches, and elms, beautiful in foliage and graceful in form, attaining here their highest perfection. In the maritime provinces the same trees are abundant, especially in the central parts of New Brunswick, but on the sea level of the Atlantic and the Bay of Fundy the cooler climate brings back the spruces and firs and pushes the deciduous trees away from the coast-line. The maple, the national emblem of Canada, is widely spread from the Atlantic to Manitoba in four species, the striped maple, mountain maple, sugar maple, and red maple. Two species, the broad leaved maple (*acer macrophyllum*) and vine maple (*acer circinnatum*), are found in British Columbia.

What is called the Manitoba maple is the ash-leaved maple, or box elder (*negundo aceroides*) flowering like the maples, but with pinnate leaves like the leaves of the ash. The total area of wooded land in Canada has been estimated at 1,248,798 square miles; of this 70,000 square miles are white and red pine lands in the provinces of Quebec and Ontario.

The yearly increasing use of wood pulp for the manufacture of paper and of many other articles of less extensive use gives great importance to the immense area of the sub-arctic forest, for it is the coniferous trees and especially the spruces which are the most suitable for pulping. Areas of woodland passed over by the lumbermen afford the precise kind of wood most desirable for paper-making. Spruce is used almost exclusively for mechanical pulp, and poplar, bass-wood, and Banksian pine for chemical pulp. Almost anywhere at the edge of the Laurentian plateau is an ideal situation for a pulp mill, with the forests in rear, and the water, for motive power and washing, flowing rapidly down to the plain of the St. Lawrence. In the year ending June 30, 1896, the export of pulp amounted to the value of \$675,777, and of pulp-wood to \$627,865. The industry is only in its infancy. Pulp-mills are being built in all the provinces of the Dominion, and how far the industry may be developed is beyond surmise. The conditions existing in Canada are the most favourable that can be conceived. During the last fiscal year the value of the pulp exported to the United States was \$557,085, and of the pulp-wood \$600,285. This was in the face of a United States duty of ten per cent *ad valorem*. Under the new tariff it is proposed to make the duty prohibitive, with a view of admitting only the wood and compelling the entire manufacture to be carried

on in the United States. Many of the mills in Canada are owned by Americans, and they have bought or leased large areas of pulp woodland. As Canadian workmen are not allowed to work in United States mills, the aim of such legislation is to deprive Canada of her natural advantages.

Fauna

The Dominion of Canada extends from ocean to ocean along parallels of latitude, and the physical conditions of the forest region of the east, the prairie region of the centre, and the mountain region of the Pacific are different; but, now that the buffalo of the prairie country has been exterminated, there is not the diversity in the land animals which might be expected. The sub-arctic forest region to the north is a bond of union across the whole continent in which similar conditions prevail.

Commencing with the animals of the widest range: the moose (*alce Americanus*) is common throughout the forest regions of the east, in the forests of the Mackenzie valley, and of the northern part of British Columbia. The most accessible regions for moose hunting now are in Nova Scotia and New Brunswick and in eastern Quebec, but the moose may be found everywhere in the northern forests. The woodland caribou (*rangifer caribou*) is now almost extinct in Nova Scotia, but is found in the forest regions of the Dominion from New Brunswick to British Columbia. This animal should be distinguished from the Barren Ground caribou (*rangifer Groenlandicus*) which roam in immense herds in the most northern parts of Canada, on the Arctic coasts and islands, and in northern Labrador. It is practically the same animal as the reindeer of Lapland, and inhabits the treeless plains of the uttermost north. The Virginia deer (*cariacus Virginianus*) is the deer still hunted in the

more southern forests of New Brunswick, Quebec, and Ontario, and is found also sparingly in British Columbia.

Of the Carnivora the largest is the puma, cougar, or mountain lion (*felis concolor*) still met with occasionally in the forest recesses of southern Quebec and in the Rocky Mountains and Pacific regions. The wild cat and Canada lynx are found throughout the wooded country from east to west, and, in summer, the lynx migrates down the Mackenzie valley to the Arctic coast. The wolf (*canis lupus occidentalis*) is another animal found throughout the unsettled portions of Canada. The variety found east of the Rocky Mountains is the grey wolf. It is almost extinct in the maritime provinces, but is sometimes heard of in the wilder parts of Ontario and Quebec and in the North-west and Pacific territories. The black wolf is found from the Mackenzie valley to the Pacific, and the white wolf inhabits the barren grounds and the islands of the far northern regions.

Many varieties of foxes (*vulpes vulgaris*) occur in Canada. Throughout the wooded regions are the red fox, the cross fox, the silver or grey fox,—on the prairies the prairie fox (*vulpes macrourus*) and the kit fox (*vulpes velox*);—on the Barren Grounds and to the farthest north, the Arctic or white fox (*vulpes lagopus*) and the blue fox (*vulpes fuliginosus*). The wolverine (*gulo luscus*) has disappeared in the maritime provinces, and is rare in Quebec and Ontario, but in the wooded regions of the North-west and British Columbia it is still common enough.

The following are found everywhere in Canada from ocean to ocean and as far north as the forests reach:—the fisher, pekan (*mustela Pennanti*), the marten, pine marten (*mustela Americana*), the weasel (*putorius vulgaris*), the ermine (*putorius ermineus*), the mink (*putorius lutreolus*). The skunk (*mephitis mephitica*) is

also common throughout Canada, and, secure in its unique power of defence, is often found close to the settlements, where poultry are the objects of attraction—a playful animal not in the least anxious to get out of the way, and one which it is well rather to go round than to hurry up. The otter (*lutra Canadensis*) is found also throughout the breadth of the Dominion, and far north beyond the Arctic circle. The habitat of the raccoon (*procyon lotor*) is more limited; it is found in the eastern and Pacific provinces but not far north nor in the prairie regions.

Bears of several kinds occur, the black bear (*ursus Americanus*) is the common bear of the country, though now it is seldom met with near the settlements. It is a somewhat inoffensive animal when let alone, and prefers wild fruits as a diet, though, if very hungry, will scarcely let anything pass. The grizzly bear (*ursus horribilis*) is a different animal, but its habitat is restricted to the central part of British Columbia and to the Rocky Mountains, though in fact it is not often seen. This is the most formidable animal of the continent. The Barren Ground bear (*ursus arctos*) is accounted a variety, for the common black or brown bear does not stray far from the wooded country. The polar bear (*thalassarctos maritimus*) is a true carnivorous bear, for it can get no vegetable food, and lives upon seals and upon fish. It is found on the coasts and islands of the Arctic Ocean and on the shores of northern Labrador.

The Rodentia occurring in Canada extend across the continent, and there are many varieties—*e.g.* the deer mouse, the wood rat, and meadow mice of several kinds. Lemmings of two kinds occur north of latitude 56°—the Hudson's Bay lemming (*cuniculus torquatus*) from Labrador to the Arctic coast and islands, and the tawny lemming

(*myodes obensis*) around Great Bear Lake and in the Rocky Mountain region. The musk-rat (*fiber zibethicus*) is met with everywhere throughout the Dominion, and the beaver (*castor fiber*)—the most important creature of this order—is found throughout from east to west and as far north as the tree line extends. This very intelligent animal is the chosen emblem of Canada, for it is at home both in the woods and waters. Hares are found also in several varieties—the polar hare (*lepus timidus*) in the Barren Grounds and along the Arctic coasts, the prairie hare or “Jack rabbit” (*lepus campestris*) on the western plains, the rabbit (*lepus Americanus*) throughout the whole country to the limit of trees, and the wood hare, a grey rabbit (*lepus sylvaticus*), common in Ontario. The Canada porcupine (*erethizon dorsatus*) extends from the Atlantic coast to the Mackenzie, and the yellow-haired porcupine (*E. epixanthus*) from thence to the Pacific.

Of the squirrels there are very many kinds. Those chiefly met in Canada are the striped squirrel, chipmunk (*tamias striatus*); the grey squirrel or black squirrel (*sciurus Carolinensis*), best known in southern Canada; the red squirrel (*sciurus Hudsonius*) from the Atlantic to the Rocky Mountains; two varieties (*S. Richardsoni* and *S. Douglassi*) continue the range of this squirrel to the Pacific; the woodchuck (*arctomys monax*), reaching from the maritime provinces round the shores of Hudson's Bay to the Mackenzie river; and the flying squirrel (*sciuropterus volucella*), which is found everywhere as far north as Great Slave Lake. Then there are the squirrels of the Rocky Mountain region, viz.—Say's chipmunk (*tamias lateralis*) and those of the western plains, viz. the grey-headed spermophile and Richardson's spermophile; and the squirrels of the far north, such as the northern chipmunk (*tamias Asiaticus* var. *borealis*)—Parry's sper-

mophile (*spermophilus empetra*)—these extend over the Barren Grounds and beyond the Arctic circle. There are also a few others of a more limited range.

Of the Insectivora the most widely distributed are moles, shrews, and bats. The star-nosed mole, the marsh shrew, and Foster's shrew, are found from the Atlantic to the Rocky Mountains. The red bat, the blunt-nosed bat, and the silvery-haired bat, are found all over the Dominion, and other species of this order exist with more local range.



PRONG-HORNED ANTELOPE.

Certain animals there are peculiar to central Canada; these are the mule deer (*cariacus macrotis*), which extends up to, but not beyond, the coast range of British Columbia; and the prong-horned antelope (*antilocapra Americana*), which is a creature of the plains. The American elk (*cervus Canadensis*) was formerly found in eastern Canada, but is only met with now from western

Manitoba to the Pacific and north of the plains. It is the same animal as the red deer; it is sometimes called "wapiti" and is most common in British Columbia, for it has been hunted to extinction almost everywhere else. The pest of the prairies is the gopher (*thomomys talpoides*). There are several varieties of gophers and prairie dogs; they burrow in the ground and undermine the surface with their colonies and villages so that horses' feet break

through and riding becomes in places unpleasant and even dangerous. They are a great annoyance to farmers. Badgers also are common on the plains. The coyoté (*canis latrans*) is also an inhabitant of the western plains.

The story of the bison, or western buffalo (*bos Ameri-*



HEAD OF ELK.

canus) is disgraceful to civilisation. The animal is practically extinct. The Indians used to live upon buffalo, and if they alone had hunted it the species would still survive; but the white men, when the railways crossed the plains, brought all the destructive forces of civilisation to bear and never rested until the last accessible buffalo was killed. The bones of the

slaughtered creatures whitened the plains and are now being sold for fertilisers. A few individuals are preserved on Sir Donald Smith's farm, near Winnipeg, and there are rumours of a few wood buffalo surviving somewhere in the Mackenzie valley. As late as 1858 a traveller across the plains drove with ponies for ten



BUFFALO, AT SILVER HEIGHTS, THE LAST OF THEIR RACE.

successive days through a continuous herd, and the prairie was black with animals as far as the eye could reach.

Some animals are peculiar to the Rocky Mountains and British Columbia. The Rocky Mountain goat (*Aplocerus montanus*) is still common on the mountains, and is even increasing in numbers, as well as the Rocky Mountain sheep or big-horn (*ovis montana*). The horns

of this latter animal are curved like those of a ram and are very large. It does not seek the highest peaks like the goat. Both these animals are limited in their range to the Rocky Mountains, but the goat delights in the



ROCKY MOUNTAIN SHEEP.



HEAD OF MUSK OX.

precipitous cliffs and snowy peaks. There is also a small deer (*cariacus Columbianus*) met with on the coast.

Besides these animals, already mentioned as extending their range beyond the Arctic circle, the musk ox (*ovibos moschatus*) must be mentioned. It does not come south of lat. 59° , and its range is through the Barren Lands to and along the Arctic coast and over the islands of the Arctic archipelago. The Eskimo dog must also be included in any list of Arctic animals. It is found wherever the Eskimo have been met with, whether on the Atlantic or Arctic coast, or on the islands of the Arctic archipelago.

The marine animals of Canada, on the Atlantic and Arctic coasts, differ from those found on the Pacific. Only one variety of seal—the harbour seal or fresh water seal (*phoca vitulina*) is found on both oceans. Its range

does not extend far north, but it is met with in Hudson's Straits. The other varieties extend from the Gulf of St. Lawrence and the coasts of Newfoundland, far away along the coast of Labrador, and along the Arctic coast and islands. It is the main support of the Eskimo, and provides his food and clothing, his light and warmth. His canoes and all his implements of war or peace are derived almost entirely from the seal. The ringed seal (*phoca foetida*) is most common in Hudson's Strait. The harp seal (*phoca Groenlandica*) is the most common seal on the coasts of Newfoundland and Labrador. The hooded seal (*cystophora cristata*) is found from the Gulf of St. Lawrence to the Arctic Ocean, and the bearded seal (*erignathus barbatus*) has the same range to the south but reaches far along the Arctic islands as well. Besides the seals, the walrus is a common denizen of the Arctic seas of Canada. In the times of the early sailors its range was as far south as Nova Scotia and the Gulf of St. Lawrence. It has been driven by hunters away north to Labrador, Hudson's Bay, and the Arctic Ocean.

Although these animals are found in the Polar ocean as far north as explorers have penetrated, they do not, save in the one instance above cited, extend down Behring Straits into the Pacific.

The animals of the latter ocean are the northern fur-seal (*callorhinus ursinus*) on the west coast of British Columbia, the sea-lion (*eumatopius Stelleri*) which goes north of the fur-seal, the California sea-lion, which has a farther southern range, and the sea otter (*euhydria lutris*) on the British Columbian coast. It was the trade with China in the fur of this last animal that brought British Columbia first into notice.

Birds

Montague Chamberlain, in his *Catalogue of Canadian Birds*, enumerates some six hundred varieties. These, for the most part, migrate to the south in winter when the streams and ponds freeze over and the ground is covered with snow. They breed and rear their young in the north, but must follow the open ground and water to find their food. Those birds which live upon buds and berries remain all winter.

Among the birds of prey are the golden eagle and the bald eagle, four varieties of gyrfalcon, twelve of hawks, and twelve of owls. Some of these breed within the Arctic circle and winter in southern Canada. Of the smaller birds the woodpeckers are most widely extended and are represented by nine varieties. The perchers are very numerous, there being over a hundred varieties—thrushes, warblers, jays, sparrows—the most showy of these birds are the belted kingfisher, the scarlet tanager, the humming birds, and the orioles. Among the thrushes are the sweetest singers—the robin or red-breasted thrush is very common all summer in the parks and gardens of the cities. Of gallinaceous birds many varieties of partridge, ruffed grouse, and ptarmigan are found abundantly over all Canada in summer and winter and up to the Arctic circle. The passenger or wild pigeons, which used to darken the air in their migrations, are now very rarely met with, the wild turkey, which used to be plentiful in southern Ontario, has also become very rare. The waders are numerous represented by plover, snipe, and woodcock, and by herons and bitterns. The great blue heron is a common variety.

It is, however, in the order of *Natatores* that Canada is pre-eminent—the ducks and geese are natives of the

northern part of the Dominion, and there they breed in prodigious numbers on the thousands of lakes remote from the haunts of men. In the fall they migrate southwards, stopping on their way in southern Canada until the lakes and streams begin to freeze, when they go south as far as the southern states and the Gulf of Mexico. As many as thirty varieties are enumerated, and, to adopt the theory laid down by the United States in the fur-seal controversy, they are all Canadian born subjects visiting the south for a short time in winter, but always *animo revertendi*; for their domiciles are in Labrador, Hudson's Bay, and the great northern lakes. The number of these birds shot for food in the north is immense, and they form a large part of the staple food supply of the Hudson's Bay posts. One of the old officers of the Company calculated that 80,000 geese are annually killed for the posts around the Bay alone, besides those killed along the Mackenzie and in other parts of the fur countries. They pass in immense numbers to the south late in fall and return early in spring, generally flying very high, and they come back invariably to the place of their birth to breed.

The coasts of the Dominion abound with waterfowl, gulls, puffins, auks, guillemots, murre, besides ducks and geese. The islands in the Gulf are clouded with sea-fowl—the Bird Rocks, the Percé Rock, and the uninhabited rocky islets of the long Labrador coast are the breeding-grounds of almost every kind of water birds. More than half of the fresh water of the world is in the Dominion, and is gathered up in myriads of lakes from the still pools of innumerable streams to the sea-like expanses of the great lakes. There is no other country like the Dominion for water, and it is not wonderful that there is no other country like it for water-fowl.

Fishes

The sea-fisheries of Canada are well known. The Atlantic coast waters abound with cod, mackerel, herring, shad, haddock, halibut, and its shores with lobsters and oysters. Some of the largest items of export from Canada are products of the fisheries, and their money values will be found in the tables of exports. Many foreign vessels flock to Canadian waters to share in these treasures, and the Dominion employs a regular fleet of cruisers to enforce the fishing laws and to guard the rights of Canadian fishermen. The Pacific waters of the Dominion also swarm with food fishes. The prodigious runs of salmon in the rivers of the Pacific coast are widely known by the immense quantities of canned fish exported. Large numbers of salmon, identical in species with the salmon of the British rivers, are caught in the streams tributary to the river and gulf of St. Lawrence. Many of the salmon rivers are leased to fishing clubs of sportsmen, foreigners as well as natives, who camp upon them in the summer.

While the wealth of the Dominion in its sea-fisheries is well known, and has been the subject of incessant controversy with the neighbouring republic whose fishermen, having exhausted their own seas, are desirous of exploiting those of Canada, it is not so generally known that all the great lakes and rivers of the Dominion, up to the Arctic coast, abound with food fishes. Lake trout, salmon trout, speckled trout and whitefish are caught in the farthest north in great numbers by the Indians for food and for the use of the Hudson's Bay Company's posts. In one season 75,000 whitefish were caught in Great Slave Lake for the use of the Hudson's Bay Company's post on the lake. The value of the fish caught in the

waters of the province of Ontario alone, in the year 1894-95 was \$1,159,968. In Manitoba and the Northwest Territories for the same period it was \$787,967. These were the produce of the settled parts of Canada, but beyond them are the great northern lakes, Athabasca, Great and Little Slave Lakes, and Great Bear Lake and all the far northern waters abounding in fish. The total product of the fisheries of Canada brought to market in the year 1894 was \$20,719,573.

Great attention is given, not only by the Dominion government but by the provincial governments, to the protection of fish and game. The penalties for infringement of the close seasons are rigorously exacted, and, warned by the fate of the buffalo of the prairies, public opinion supports the laws. In some parts the number of wild animals is increasing. Parties are not now allowed to go into the woods and kill as many wild creatures as they can. Indians are allowed a necessary latitude ; but the wanton destructiveness of cultivated white men is held in check. Fish-breeding establishments have been established on the shores of the ocean and inland waters, and lobster and oyster culture is also carried on under government officials supervised by a scientific officer. The attractions the Dominion offers to sportsmen in every one of its provinces are very great, and the people everywhere are alive to the importance of strictly enforcing the laws in this respect.

Difficulties sometimes arise on the St. Lawrence lakes, and one of the United States border newspapers puts the matter very clearly as follows :—"Once the fisheries of Ohio were far superior to those of Canada. Now the conditions are reversed ; Canada, having given reasonable protection to the fish, is reaping a golden harvest from her fishing interests. Having persistently fought

every effort to protect the fish in Ohio, and driven the fish into Canadian water, the American fishermen, contrary to the law, attempt to follow the fish into the waters of the Dominion, where they are caught and made to suffer a lighter punishment than they deserve."

Indians

The wild tribes of the western world are still known by the general name, Indian, given them by the early sailors who thought they had discovered the Asiatic continent. Whatever vague traditions they have, all point to the north-west as the direction from whence they came, and to the north-west the spirits of the dead are believed to travel on their journey to the abodes of the departed. Without expressing any opinion as to the tribes of Central and South America, it seems natural to suppose that the Indians of northern America crossed from Asia by Behring Strait, and the opening of trade relations with Japan tends continually to confirm this opinion, as greater opportunities are developed for comparison between the people on both sides of the Pacific. The different tribes of Indians in the Dominion, excepting the Indians of British Columbia, are grouped according to affinities of language into the following families. 1. Eskimo. 2. Algonquin. 3. Huron-Iroquois. 4. Chipe-wyan. The island of Newfoundland was inhabited at the time of its discovery by a race of savages, the Beothiks or Red Indians, who seem to have been superior to the tribes on the adjacent coasts. They were exterminated by the whites and by the Micmacs, who were brought in by the French at Placentia, and the last of them perished some time about A.D. 1827. They had been treated with such cruelty and treachery that they

retired into the inaccessible recesses of the centre of the island, and would never trust the overtures of the Government in its later attempts to make amends for past injuries. There they passed away in silence, and their last traces were found at Red Indian Lake. The Indians of North America are called savages, and were cruel in war, but in America the whites have often been cruel in war and peace, unjust, and relentless. From the discovery of the continent they stole the unsuspecting natives and sold them into slavery—the very first name on the continent, Labrador, tells of man-stealing. What poet or painter can ever depict the last remnant of the Beothiks, which proudly and silently passed away on the shores of Red Indian Lake, spurning the proffered overtures of the whites who had persecuted them to the last family with their superior weapons! From the scanty vocabularies which have been preserved it cannot be pronounced with certainty whether or not they belonged to the Algonquin race; though the weight of authority inclines to the belief they did.

The Eskimo—Innuits as they call themselves—extend from northern Labrador to the northern shores of Hudson's Bay and along the coasts and islands of the Arctic Ocean. They seldom penetrate far inland or leave the haunts of the seals that provide them with all they need—food, clothing, and implements. At some not very remote period the Eskimo crossed over into Greenland. From Alaska, along the whole immense stretch of several thousand miles of coast to Greenland, they all speak the same language and are supposed to have crossed from Asia by Behring Strait. They are a good-natured and peaceful people, and, although their first contact with the Europeans on the Labrador coast was hostile, it was the fault of the whites who, by their violence and cupidity,

alienated and terrified them. The natural disposition of the Eskimo is seen by the assistance they have always given to Arctic explorers, and by the fact that they have never attacked isolated parties no matter how enfeebled by hunger, and yet these starving and helpless white strangers must have possessed many objects tempting to the poor natives. They are intelligent and support themselves with ease in those far northern regions where white men, with all the resources of civilisation, have seemed unequal to the task. They have much artistic capacity. Eskimo, who had never before seen pencil or paper, drew surprisingly accurate maps for Parry, Ross, and other Arctic voyagers. They are fond of music and learn to sing in harmony, and to play on various musical instruments with great readiness, and they alone of the American tribes have trained an animal, the Eskimo dog, to do their bidding. They are of middle stature, not dwarfed, as often represented, square-shouldered and very hardy beyond all other races. They are bold and daring on the water, attacking alone in their frail kayaks on the open sea the largest sea animals and yet always at peace with each other. The Indians at the south have always been their enemies. The name Eskimo is Algonquin and means "eater of raw meat," as a term of reproach, and, beyond doubt, whatever their artistic tastes may be they have not been directed to the culinary art. The Moravian missionaries have christianised the Labrador Eskimo, and those around Hudson's Bay, Baffin land, and the mouth of the Mackenzie have come under the influence of the Anglican missions.

The most widely distributed race of Indians in the Dominion is the Algonquin. This great family extends from the Atlantic to the Rocky Mountains. In the maritime provinces the Micmacs, Malicetes, and Aben-

akis; in Labrador and eastern Quebec the Naskapees and Montagnais; in western Quebec and Ontario the Mississaugas, the Ojibways, and the numerous tribes which assisted the French in the old colony wars, generally grouped under the name Algonquin; in Manitoba and the north-west, the Crees and Saulteux—all these are Algonquins, and their languages are reducible to the same stock. The Cree is the typical language of this group and is a key to the others. This race of Indians were great hunters and warriors, but had not the political organisation nor capacity of some of the races with which they came in contact. They stretched away to the south along the Atlantic coast, and were the kinsmen of the Delawares, Shawnees, and other tribes in the present United States.

The Iroquois-Huron race and its varying fortunes are inseparably interwoven with the history of Canada. A few facts seem to stand out with sufficient distinctness from the shadowy pre-historic traditions of this remarkable race. When Cartier first opened up to Europe the valley of the St. Lawrence, he found at Hochelaga (Montreal) a fortified, palisaded town inhabited by a people who cultivated the soil. These were people of the Iroquois-Huron race. The Algonquins roamed over the country to the north, and probably to the east of Three Rivers; and there were even then hostile relations between the two races, for the Quebec Indians sought to prevent Cartier from going farther up the river by stories of the fierceness of Indians, whom Cartier calls Toudamans, and in fact a people of that name are placed on a celebrated map of 1544 (Sebastian Cabot's map), near the site of Hochelaga. That map was based upon information derived from Cartier's voyages, but when Champlain arrived, seventy years later, the town of Hochelaga had dis-

appeared—not a trace remained; the Iroquois were living in the region now known as northern New York, and the Algonquins occupied the whole of the St. Lawrence valley, if roaming over the territory in war parties and hunting parties can be called occupation. The country round Montreal was without inhabitants—a debatable land—the border march of two hostile races. The Iroquois, with their fixed abodes and more civilised habits, had been driven away and Champlain had arrived just at the time when they were recovering from their disasters.

The Iroquois were the Romans of this continent in their genius for political government. Under their misfortunes their spirit rose and they organised themselves into a confederacy. There were five tribes at first—the Mohawks, the Oneidas, the Onondagas, the Cayugas and the Senecas. These last are the Toudamans of the French maps, and were called by the French Tsonnontouans in after years. They were on the extreme west, near Niagara, and the Mohawks were on the extreme east, near Lake Champlain. The council house of the confederacy was in the centre with the Onondagas. The Tuscaroras, a kindred tribe to the south, joined the confederacy later, and it was thenceforth known as the Six Nations, or generally as the Iroquois. This politic people held the balance between the English and French for many years. They were really six independent republics, organised for united defence, and the unorganised Algonquins were unable to bear up against a policy so subtle and persistent. During the seventy years between Cartier and Champlain some revolution had occurred to alienate the Iroquois from the Hurons, due, say the traditions of the Hurons (Wyandots), to a dusky Helen (so history keeps repeating the old story),

♦

and the Hurons had been driven far away to the country between Lake Simcoe and Georgian Bay on Lake Huron. They were pursued by the Iroquois with relentless hatred and utterly destroyed as a nation. It was a political maxim of the Iroquois, as of the Romans, never to carry on more than one great war at a time and utterly to crush and root out an enemy, so as never to have the work to do over again. Having terrorised the Algonquins and ruined the Hurons, they proceeded to exterminate the Neuter nation and the Tobacco nation then living in the peninsula of Ontario. Then came the turn of the Eries and the Andastes, and their ruthless career was only arrested by contact with the powerful tribes of the Sioux. Their position was central. They were surrounded on all sides by Algonquin tribes who had not the political sense to unite and act in concert. The Iroquois were a nation of orators as well as of warriors, and they dissembled until they were in a position to strike. For more than one hundred years they were a terror to the surrounding tribes, an anxiety to the English, and a menace to the French. With most profound policy they massacred all the adults of each tribe they conquered and adopted the children, who grew up as Iroquois, and thus their numbers were kept up. Their warfare was cruel, but not more cruel than that of Cæsar in his Gallic wars—not more cruel than that of Simon de Montfort in Languedoc—nor than that of Tilly and Wallenstein in the Thirty Years' War: nor more cruel than the wars on the Turkish and Tartar frontiers down almost to our own time. A remnant of the Hurons took shelter at Lorette near Quebec after the ruin of their nation, and a few are left, but of mixed blood. The Iroquois survive still on their reserves at St. Regis, and Caughnawaga in Quebec, and on the Grand river and

Bay of Quinté in Ontario. Of the descendants of the Six Nations there are about 9000 surviving in Canada and 7000 in the United States, without counting the Cherokees, who are of the same race.

The language of the Iroquois-Huron race is more musical than that of the surrounding people. To them we owe many of our most sonorous names, such as Toronto, Ontario, Niagara, and in their political confederacy was the germ idea of the union of the English colonies.

The fourth great group of Indian tribes is the Chipe-
wyan or Athabaskan, called also the Tinnéh. These roam over the region between the Algonquin Crees and the Eskimo; west of Hudson's Bay and north-west of Little Slave Lake and Lake Athabasca, including the interior of Alaska and a part of British Columbia. The different tribes are known as Dogribs, Yellow-knives, Slaves, Hares, Loucheux, Sicannie, Nahanie—and there are many others. There are outliers of this race to the south such as the Apaches and Navajos, and one of the tribes of the Blackfeet, the Sarcees, is of the same stock. In the north these Indians are of a peaceable disposition, although the Apaches and Navajos are the most untamable savages of the plains. This group of Indians is inferior to the Algonquin in intellectual capacity and civilisation as well as in physical strength.

The four great races above described are grouped by the affinities of language, although their habits differ according to their surroundings. The northern Chipe-
wyans live on fish and game and have no horses, while the Apaches and Navajos are equestrian tribes. In British Columbia are many smaller tribes differing in language. In the northern part of the interior are the Tinnéh already mentioned; in the southern part are the Salish or

Shuswap, and in the south-east the Kootanie Indians. On the coast the divisions are more numerous. The Haidas occupy the Queen Charlotte islands. Along the coast and on Vancouver Island are the Tahimsian, the Kuakiool, the Bilhoola, and the Aht or Nootka Indians. These last are the Indians known to the first traders. A more general name, Kawitshin, includes several other tribes, probably of Salish stock, living round the Strait of Georgia. Besides these are the Chinooks of the lower Columbia. All these are maritime tribes and build good canoes which they manage with skill and are able to paddle almost any distance along the coast of the Pacific. Many of these Columbian Indians have settled down to steady work, and earn good wages at the salmon canneries along the coast. They seem more adaptable to the methods of civilisation than the tribes of the interior, and some even live in good houses with furniture. Since the discovery of the country a trade language has been developed known as the Chinook jargon. It is a mixture of Chinook, English, French, Nootka, and other tongues, corresponding to the Pigeon English of the Chinese coast. By means of this "hotch-potch" trade has been carried on along the coast since the English fur-traders arrived. It is the "volapuk" of the Pacific coast.

The Dominion has relations also with some of the tribes of the great Sioux or Dakota race which overlap the frontier along the Missouri Coteau. The Assiniboines or Stony Sioux have given their name as before stated to one of the chief rivers of Manitoba. The Blackfeet, a powerful tribal confederation of this race, have large reservations in Alberta, and are still formidable from their numbers. After the great rising in Minnesota, some others of the Sioux implicated removed into British territory where ever since they have peacefully resided.

In dealing with the Indians the Canadian Government has acquired the land by definite purchase, granting certain annual subsidies and making certain defined reservations



Topley, Photo.

CROWFOOT, THE GREAT CHIEF OF THE BLACKFEET.

of land for the support of the Indians. Great care has always been taken to see that they are not cheated by white people, and intoxicating liquors of all kinds are excluded from the Indian reservations. Schools for the young, and industrial schools for teaching trades to youth

are carried on, and farm instructors are stationed on the reserves to teach the Indians to cultivate the ground. Good results have followed, and much greater success is hoped for. The Dominion Government has now in hand a capital sum of \$3,650,529 belonging to the Indians and



INDIAN BOY, 8 YEARS OLD BEFORE BEING SENT TO SCHOOL.

administered for their benefit. Official returns are made, from every agency, of the individual earnings of Indians, and they amounted in the aggregate to \$1,602,005 for the year ending June 30, 1895. This was earned throughout the Dominion by fishing, hunting, lumbering, loading ships, helping farmers, and acting as guides, to-

gether with the sale of hay and other produce raised by their own hands. In British Columbia there are many Indians in good circumstances, even from a white settler's point of view.

The last Report of the Indian Department up to June



THE SAME BOY, 12 YEARS OLD, IN THE UNIFORM OF THE
GOVERNMENT SCHOOL.

30, 1896, gives the numbers of resident and nomadic Indians as follows:—

INDIAN POPULATION OF CANADA

Ontario	17,663
Quebec	10,626
Nova Scotia	2108

New Brunswick	1590
Prince Edward Island	308
British Columbia	25,068
Manitoba	9444
North-west Territories	14,679
Upper Mackenzie district	400
Eastern Athabasca	881
Lower Mackenzie	2058
Great Slave Lake	1915
Riviera aux Liards	377
Athabasca	1331
Peace River	893
Lesser Slave Lake	1218
Yukon	2600
Nelson and Churchill River districts	852
Eastern Rupert's Land	4016
Labrador—Canadian interior	1000
Arctic Coast—Eskimo	1000
Grand total	100,027

Of these 16,812 are known to be Pagans; 28,498 are under the influence of Protestant, and 42,454 of Roman Catholic missionaries.

Political Divisions

The Dominion of Canada is composed of provinces, each having a government of its own, independent for local purposes. Commencing on the east, they are as follows:—

Nova Scotia	Capital	Halifax
New Brunswick	„	Fredericton
Prince Edward Island	„	Charlottetown

These three form a group—the maritime provinces—similar in climate, population, and general conditions. They are Acadia, *L'Acadie* of French history.

Quebec	Capital	Quebec
Ontario	„	Toronto

These are sometimes called Old Canada. They are diverse in population and language, but similar in climate and physical conditions. They are *La Nouvelle France* of French history, and compose Canada in its narrow and strictest sense.

Manitoba

The central prairie province—capital, Winnipeg.

British Columbia

The Pacific province—capital, Victoria. Besides the provinces there are the following:—

TERRITORIES

Assiniboia	|	Saskatchewan
Alberta	|	Athabasca

These form the North-west Territories, and are governed by a lieutenant-governor and council from Regina as a capital, but are more dependent on the central government than are the provinces.

The remaining portion of the Dominion is divided into

UNORGANISED DISTRICTS

Mackenzie—the Mackenzie region.

Yukon—the British portion of the Yukon valley.

Keewatin—the territory between the west coast of Hudson's Bay and the Mackenzie valley.

Ungava—the region between the east coast of Hudson's Bay and the strip of the Labrador coast belonging to Newfoundland.

Franklin—the Arctic archipelago.

These remote regions have no organised government. Keewatin is, however, under the care of the Lieutenant-Governor of Manitoba, and it is worthy of note that

during the seven years' term of the last governor there was no crime committed calling for his intervention.

Population

The last census of the Dominion was taken in 1891, and the following tables are from the returns of that year. In using them it must be remembered that more than one-half of another decennial period has elapsed, and that they are understatements to that extent. The growth of the western cities has been very rapid during the last six years, as will be seen from the ratios of increase. A census of the province of Manitoba alone was taken in 1896, and the result is given in the chapter on that province.

POPULATION BY PROVINCES

	Census of 1891.	Ratio of Increase.
Ontario	2,114,321	9·73
Quebec	1,488,535	9·53
Nova Scotia	450,396	2·23
New Brunswick	321,263	—
Manitoba	152,506	144·95
British Columbia	98,173	98·49
Prince Edward Island	109,078	0·17
The Territories	98,967	75·33
Total	4,833,239	

Of the total population, 28·7 per cent live in the cities and 71·3 per cent in the country. The proportion of males is 509 of every thousand. In the western provinces there is a large preponderance of males. In British Columbia there are 642, in Manitoba 553, and in the territories 543 to the thousand.

PERCENTAGE BY PROVINCES OF THE TOTAL POPULATION

Ontario	43·9
Quebec	30·7
Nova Scotia	9·3
New Brunswick	6·7
Manitoba	3·1
Prince Edward Island	2·3
British Columbia	2·0
Territories	2·0
	<hr/>
	100·0

POPULATION BY NATIONALITIES

Born in the Dominion of Canada	4,185,877
„ other British possessions	490,252
„ foreign countries	157,110
	<hr/>
Total	4,833,239

POPULATION BY RELIGIONS

Roman Catholics	1,992,017
Methodists	847,765
Presbyterians	755,326
Church of England	646,059
Baptists	303,839
Other denominations	288,233
	<hr/>
Total	4,833,239

The Roman Catholics are therefore 41·21 per cent of the total population; Methodists 17·54; Presbyterians 15·63; and Church of England 13·37.

Population by Languages

Canada having been colonised first from France, a very large proportion of the population speak the French language. The ratios given in the last census are :—

French-speaking Canadians throughout the Dominion—per cent	29·4
All others	70·6

The present distribution of the two languages is in the percentage ratio following, taking the provinces separately :—

Province.	French.	All others.	Province.	French.	All others.
Nova Scotia . . .	6·7	93·3	Ontario	4·8	95·2
New Brunswick . .	19·2	80·8	Manitoba	7·3	92·7
Prince Edward Island	10·8	89·2	British Columbia .	1·3	98·7
Quebec	80·4	19·6	North-west Territories	2·3	97·7

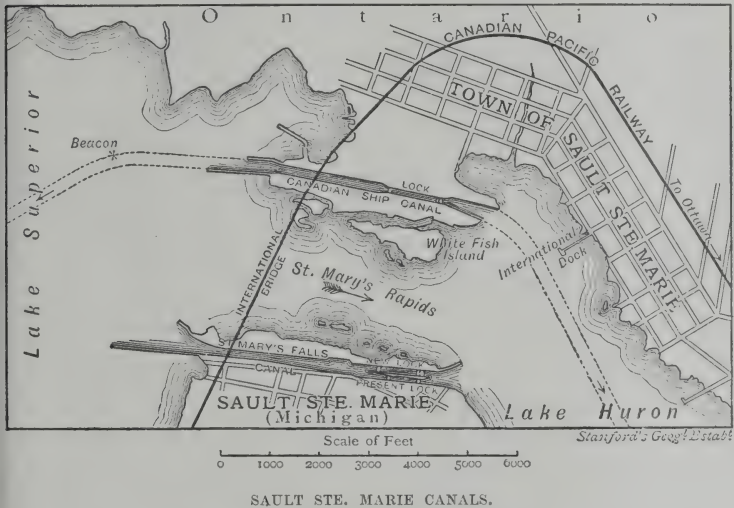
The French language is, by law, upon an equal footing with the English in the Dominion Parliament. Members may speak in either language, and all public proceedings and documents are printed in French as well as in English. This is due to the fact that, excepting in British Columbia, French was the first European language spoken ; the French having first explored and occupied by settlements or posts every province in the Dominion south of Hudson's Bay from the Atlantic to the Rocky Mountains.

A careful calculation has recently been made in the department of statistics, and the population of the Dominion has been estimated at 5,125,436 at the end of the year 1896.

Communications

The hydrography of the Dominion and its history show that it is, by nature, a country of easy communications, and before the era of railways great efforts were made to improve the waterways by canals and develop them to the utmost extent possible. The total expenditure by Government for canals on capital account amounts to \$66,948,348 to June 30, 1896. There are three chief systems: 1. The St. Lawrence system by canals having an aggregate length of 71 miles. These are now being deepened to 14 feet. Their present depth is from

9 feet upwards as the work has progressed. The locks are 45 feet wide and 200 to 270 feet long. Ocean steamers, drawing $27\frac{1}{2}$ feet, pass up to Montreal, 986 miles from the Strait of Belle-isle. From thence to the head of Lake Superior there are eight canals, with 54 locks in all, overcoming a total rise of 600 feet, and



rendering available to large inland steamers an additional stretch of 1274 miles to Port Arthur. The Sault Ste. Marie Canal, just completed, makes a continuous connection throughout on the Canadian side of the lakes.

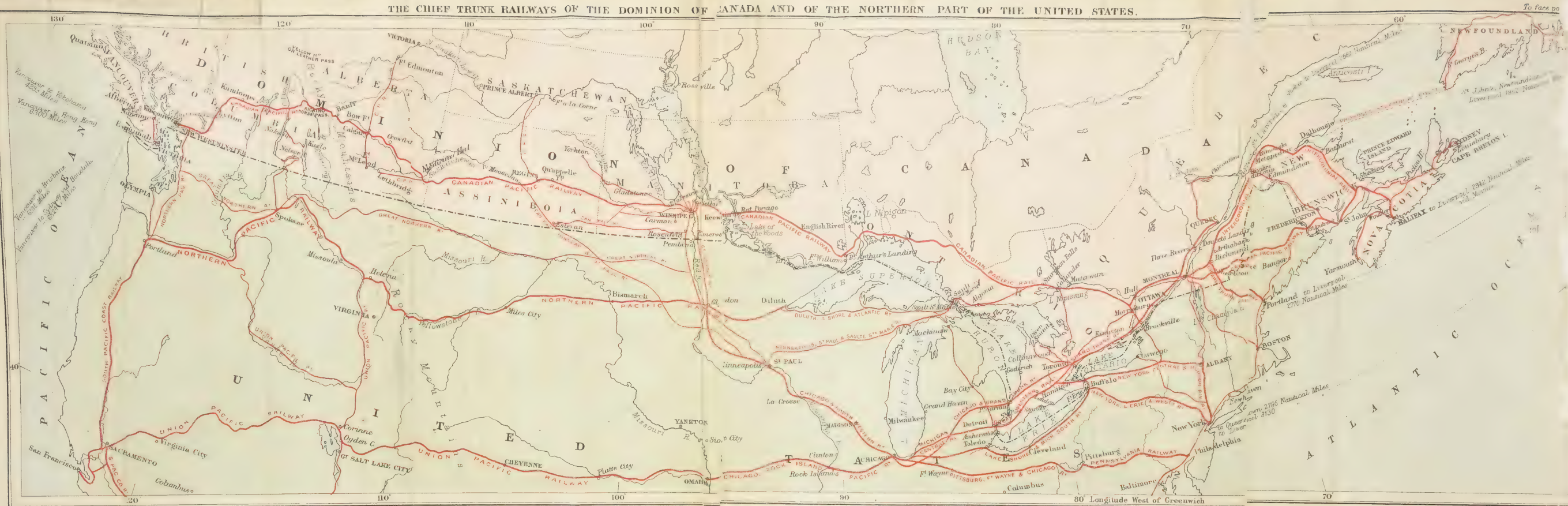
2. The Ottawa and Rideau system giving an interior connection between Montreal and Lake Ontario. 3. The Richelieu system, rendering available by a few locks the whole course of the Richelieu river into Lake Champlain. There are other canals, but these are on the main arteries of commerce.

When the railway era began the water communications of Canada were complete to the head of Lake Huron. The people saw the necessity of keeping up with the advancing age, and the Government (for in Canada it is a people's Government) up to June 30, 1896, expended directly, or in subsidies, an aggregate sum of \$138,899,135 upon railways. This has been spent during the last forty years. In 1850 there were 66 miles of railway in operation, and in 1896 there were 130 railways with an aggregate length in operation of 16,387 miles. These also, by amalgamation and absorption, may conveniently be arranged under a few systems: 1. The Grand Trunk system, extending from Quebec and from Portland, Maine, and following the old settled districts along the St. Lawrence valley, branching out through Ontario and terminating at Chicago in the United States; it has the largest traffic. The aggregate length of this system is 3161 miles. Next in order of time is the Intercolonial railway, built and managed by the Government, extending from Halifax, St. John, and Sydney on the Atlantic, to Quebec. This system is 1397 miles long. Lastly, the Canadian Pacific system stretching from Quebec on the St. Lawrence, and St. John on the Atlantic, to Vancouver on the Pacific, and touching, by many branches, nearly all the large cities. The total length of this system is 6216 miles. These three systems control 10,774 miles, of the total of 16,387 miles in Canada.

The railways of Canada have a uniform gauge of 4 ft. $8\frac{1}{2}$ in., and the great trunk lines are provided with parlour, dining, and sleeping-cars, and all other conveniences for the luxurious travellers of the present day. The number of passengers carried in 1896 was 14,810,407, and there were 24,266,825 tons of freight moved. The gross earnings were \$50,545,569, and the



THE CHIEF TRUNK RAILWAYS OF THE DOMINION OF CANADA AND OF THE NORTHERN PART OF THE UNITED STATES.



working expenses were \$35,042,655. The total paid-up capital invested in railways up to 1896 was \$899,817,900, of which amount 22 per cent was supplied by state or municipal subsidies.

While the Grand Trunk railway parallels the old waterways and the Intercolonial connects the maritime provinces with the St. Lawrence valley, the Canadian Pacific railway passes through the centre of the Dominion, and opens up to settlement regions before inaccessible, as well as the boundless regions of the west and north-west. It realises the aspirations of every Canadian from Champlain down to our own day by opening up a western passage to the great South Sea through its natural portal the Gulf of St. Lawrence. The following table of distances gives the length of the chief routes from England to Shanghai, and it will appear that not only is the route through Canada shorter in summer, when the ocean steamers go direct to Montreal, but that in winter, whether the traveller land at Halifax, Boston, or New York, the shortest route is still by way of Montreal and the Canadian Pacific railway to Vancouver.

DISTANCES FROM LIVERPOOL TO SHANGHAI

A. By the St. Lawrence route—steamer direct to Montreal.

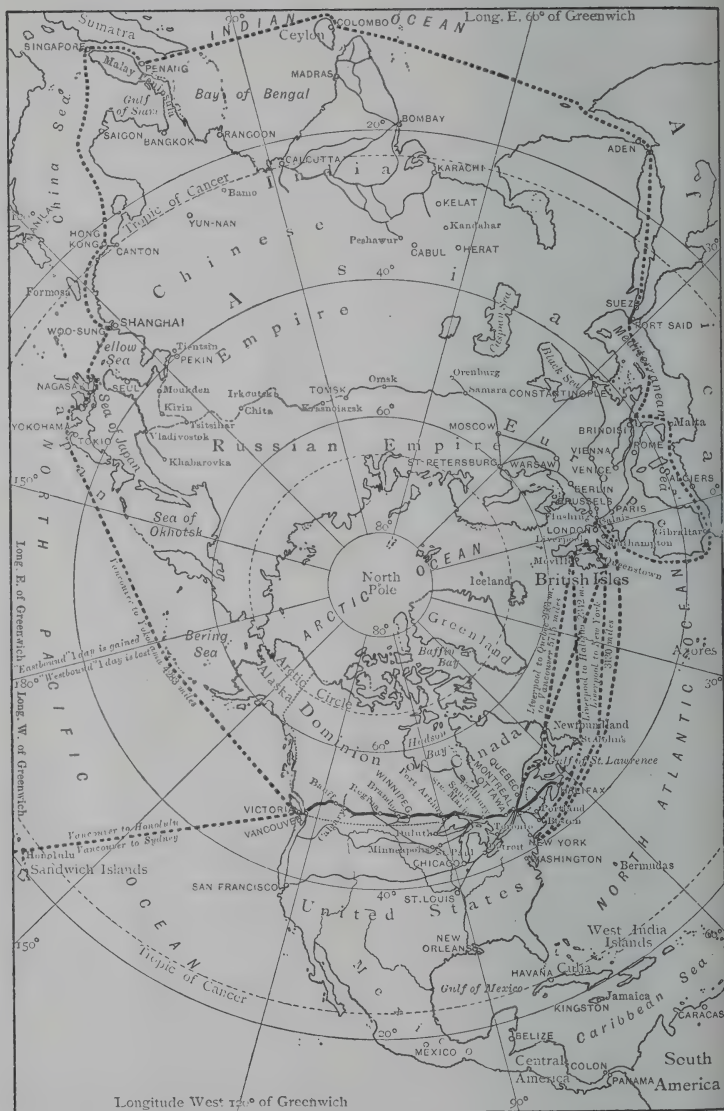
<i>Via</i> Canadian Pacific and Vancouver	11,065 miles
„ Chicago, Northern Pacific, and Tacoma	11,387 „
„ Chicago, Union Pacific, and San Francisco	11,549 „

B. By Halifax, N.S., as the Atlantic port, and from thence by rail to Montreal.

<i>Via</i> Montreal, C. P. R., and Vancouver	11,504 miles
„ Montreal, Chicago, N. P. R., and Tacoma	11,823 „
„ Montreal, Chicago, U. P. R., and San Francisco	11,987 „

C. By Boston, Mass., as the Atlantic port, and from thence by rail to Montreal or Chicago.

<i>Via</i> Montreal, C. P. R., and Vancouver	11,556 miles
„ Chicago, N. P. R., and Tacoma	11,723 „
„ Chicago, U. P. R., and San Francisco	11,885 „



SHORTEST ROUTE, LIVERPOOL TO EASTERN ASIA.

Stanford's Geog. Estab.

D. By New York as the Atlantic port, and thence by rail to Brockville in Canada and Chicago.

<i>Via</i> Brockville, C. P. R., and Vancouver	. . .	11,586 miles
„ Chicago, N. P. R., and Tacoma	. . .	11,770 „
„ Chicago, U. P. R., and San Francisco	. . .	11,932 „

The route by Montreal is of necessity the shortest, because the higher the latitude the closer are the meridians of longitude, and the quicker will a traveller reach the longitude of Shanghai. This is in effect the passage to Cathay which Cabot set out to find exactly four hundred years ago, for he first fully apprehended the fact that the great circle on the globe from Europe to Japan was by the north. The railway communications of each province are given more in detail in the separate chapters.

Government

The government of Canada is, like that of Great Britain, monarchical in form but democratic in substance. Theoretically the Crown with the Imperial Parliament is supreme, and, on rare occasions, on petition of the colonial governments, these supreme powers are put in motion ; as, for instance, in the case of the British North America Act, 1867, which formed the separate provinces into a confederation and re-distributed all their existing powers into new groups. Practically, however, the Dominion is self-governing, and the Queen and Parliament of Canada carry on the government under all the forms, the implied understandings, and the conventions, written or unwritten, which obtain in the Mother Country, so far as they are applicable. Precisely as the Queen, by her ministers, and together with the Imperial Parliament, governs the British Isles, so the Queen's representative, the Governor-General, by his ministers, and with the Canadian Parlia-

ment, governs the Dominion of Canada. Both parliaments enact the laws under similar forms, and raise and vote away the taxes under the same safeguards. Both parliaments have certain of their number, in form appointed by the Crown, but responsible to parliament, who nominally, as a committee of the Queen's Privy Council, but effectually, as a committee of the majority in parliament, administer the laws and collect and expend the revenues. The parallel is precise as between the government of the Mother Country and that of the Dominion.

The Dominion of Canada is a confederation of distinct colonies or provinces, each of which had previously a constitution of its own. At confederation the existing laws remained in force in each province until altered by competent authority; but the political powers and capacities merged for a moment into the central *imperium* immediately to emerge newly grouped. The powers of a more general nature were vested in a new creation, to wit the Dominion Government, and the powers of a more local nature were re-granted to the provincial governments. The provincial governments are presided over by lieutenant-governors appointed by the Dominion Government, and their proceedings and administration are carried on under similar forms; but whether the lieutenant-governors are representatives of the Queen or of the Dominion Government is a moot point in political theory concerning which much has been said on both sides.

The seat of the Government of the Dominion is at Ottawa. The Government consists of the Governor-General, appointed by the Queen in Council, the Senate of 78 members, appointed for life by the Governor-General on the recommendation of his Privy Council, and the House of Commons of 213 members, elected for five years by the people under a franchise so popular as almost to

amount to manhood suffrage. After every census the constituencies are approximately equalised and adapted to the movements of the population, and this sometimes gives rise to misunderstanding, for the electoral divisions for Dominion purposes differ from the electoral divisions for provincial purposes, and the maps often are, in that respect, misleading.

The powers which reside in the Dominion Parliament are such as relate to the regulation of trade and commerce, the post office, the customs and all indirect taxation, militia and defence, navigation, banks, currency, bills of exchange, interest, Indian affairs, the public debt, the criminal law, naturalisation, patents, and a general reserve of all powers not specially allotted to the provincial governments.

The provincial governments consist of a lieutenant-governor and a legislature of one or two chambers, for the provinces are not all alike in this respect. The subjects under the control of the provincial governments are—direct taxation for local purposes, the public lands of the province, municipal institutions, property and civil rights in the province, education, hospitals and charitable institutions, administration of justice in the province, and generally all matters of a local nature. The provincial governments make laws, each for its own province within the limits of their powers, and the Dominion Government legislates in the subjects allotted to it and its laws extend over the Dominion. The sum total of political power may be considered as divisible into four classes. (a) Powers reserved exclusively to the Dominion Parliament. (b) Powers reserved to the provincial legislatures exclusively. (c) Concurrent powers. (d) Residuum of powers unenumerated or unprovided for, vested in the Dominion Parliament.

Two courts sit at Ottawa and have jurisdiction over the whole Dominion—the Exchequer Court, having also vice-admiralty jurisdiction, and the Supreme Court, to which appeals may be carried from any court of the country. From all the courts in Canada an appeal may be taken to the Imperial Privy Council or, as it is called, to the Queen in Council. The provinces differ in their interior organisation; some have excellent municipal institutions, self-governing in matters of roads, bridges, licenses, and such like local matters, and others are not so well organised. One important point must be noted, that, as the Imperial Government has power to disallow within two years any act of the Dominion Parliament, so the Dominion Government has the power to disallow any act of a provincial legislature.

The government of Canada, in its federal aspect, has some points of resemblance to that of the United States; but, in its spirit and administration, is the outgrowth of the constitution and political genius of the Mother Country. It is the aim of the members of all political bodies in Canada to follow English parliamentary rules, to quote English authorities, and to be guided by English precedents. In its system of local self-government is found the most practical method of governing the enormous area of the Dominion, and every municipal council is a school of instruction in public administration.

While the fundamental political law of the Dominion is, as above stated, the British North America Act of 1867, the fundamental civil law in all the provinces but one is the common law of England, and the fundamental criminal law for all the provinces without exception is the criminal law of England. In the province of Quebec, for reasons stated in a later chapter, the fundamental civil law is the law of France before the Revolution, in other words,

it is the Roman Civil Law as prevailing on the continent of Europe, based on the code of Justinian. It happened that the law of Quebec had just been consolidated into a code by a commission of very capable lawyers, and the province of Quebec entered confederation with this code and, as property and civil rights are subjects reserved to the provinces, the French law cannot be changed by the Dominion Parliament. Many who have lived under both laws prefer it to the English law, but the procedure is more cumbrous.

The judges are appointed for life by the Governor-General in Council and can be removed only by impeachment. The civil service also is a body of permanent officials as in Great Britain and all her colonies, and in the United States as far as the recent reformation of the civil service there yet extends.

The militia of Canada consists of—(a) the active militia, a body of about 35,000 men, volunteers well armed and disciplined, and assembled in camps once a year for practice in manœuvring in large bodies; and (b) the sedentary militia, consisting of all the able-bodied men in the Dominion of suitable age and who are liable to be called upon for personal service in time of war. This is a potential, not an active force, for it has no organisation.

In relation to the Empire, Canada is bound by imperial treaties. It has, however, been customary of recent years to call in the assistance of Canadian representatives in the negotiation of all matters affecting the Dominion. Customs duties are imposed by the Dominion Parliament, impartially and equally, on goods imported from the Mother Country or from foreign countries. A *Zollverein* of the Empire has been proposed, but public opinion is not yet ripe for it either in Great Britain or in the colonies.

History

While the separate provinces of Canada have histories full of interest and romance, the annals of the collective Dominion date only from 1867, when the British North America Act came into effect. It is only thirty years ago, and since then there have been, fortunately, no wars, and nothing which is startling or picturesque. The country has steadily advanced, and as each province cast its lot in with the first four, national spirit grew, and, as the provinces were knit together by railways and the provincial delegates continued to meet at a common centre and discuss measures for the general good, the people of the provinces learned to know each other and began to take pride in the potentialities of their common country. Local jealousies began to fade away, and the mental horizon of every man widened out to the scope of an enlarged citizenship. Two events are dominant in this short period. The building of the Intercolonial railway and the building of the Canadian Pacific railway; without these confederation would have been impossible, and to secure them the people of Canada have made, and are still making, great sacrifices. In despite of fears within and jealousies without, the Canadian people went on in its own way to fulfil its own destiny, and beyond doubt will go on to perform the part assigned to it hidden in the counsels of Providence, whatever that part may be. Only Newfoundland stands aloof bearing her burdens alone. Whenever she shall think fit to join the union of sister provinces, the dream of many generations of colonial statesmen will be realised.

Trade and Commerce

The resources of Canada have been developing rapidly during the last few years. The Dominion possesses for grazing and wheat lands the broadest prairies, for lumbering the most extensive forests, and in its seas and lakes the most productive fisheries in the world. It has coal cropping out on the shores of the Atlantic, and coal cropping out on the shores of the Pacific, and coal underlying large areas of the interior plains. The output in 1896 was 3,743,234 tons. Gold has been mined in Nova Scotia and in British Columbia for many years, but during 1895 and 1896 an entirely new gold area has been brought into prominence and successfully worked near Lake of the Woods in western Ontario, and the Kootenay region of British Columbia has developed unexpected riches. These most important factors will draw the attention of Canadians more to the mineral resources of their country.

It was natural that the attention of the people should in the first instance have been directed to the sea; for the deeply indented coast-line on the Atlantic is calculated to be 10,000 miles in length, and the Pacific coast in all its sinuous length is estimated at 7000 miles. Such a conformation of coast-line produces good harbours, and the forests at the water's edge suggest shipbuilding. Added to these conditions, the immense inland waterways were, before the railway age, the only lines of communication, and naturally the people turned in the first instance to the water. The introduction of iron for shipbuilding, and the adoption of steam as a motive power struck a severe blow at the chief industry of the maritime provinces, and the amount of registered tonnage

has been decreasing. In 1878 it reached its highest point, being then 7468 vessels, aggregating 1,333,015 tons.

Canada, however, still holds the sixth place among the nations as an owner of shipping. The last available returns came down to the end of the year 1895, when the number of vessels owned was 7262, and the aggregate amount was 825,836 tons register.

The following table will give an idea of the activity of shipping in the ocean and inland ports:—

TABLE OF MOVEMENTS OF SHIPPING IN CANADA

	Vessels.	Tonnage.
Sea-going vessels arrived and departed exclusive of coasting vessels . . .	29,802	11,458,824
Coasting vessels arrived and departed .	125,017	27,431,753
Inland vessels arrived and departed .	35,182	10,411,649

The foreign trade for the year ending June 1896 was

Imports	\$118,011,508
Exports	121,013,852
Total trade .	<hr/> \$239,025,360

This trade is chiefly with Great Britain and the United States and, as the natural course of trade has been deflected by outside legislation, it is necessary to consider the items separately. It will then appear that the imports from Great Britain are 30 per cent, and from the United States 53 per cent of the total amount. Of the exports 54 per cent are to Great Britain and 36 per cent to the United States. The exports do not seem to be much affected by the incessant efforts of the United States Congress to check them by new customs duties, for in fact most of them are of food and raw material. It is very difficult for any country in this present age completely to isolate itself. The trade of the Dominion is steadily growing, and the hostile legislation which aims to

drive Canadian trade away from the United States does not kill the trade, but simply diverts it into new channels and opens up wider avenues and safer markets.

The Statistical Year Book of Canada shows that while articles of food and animals make up 30·97 per cent of the imports into the United States they form but 19·39 per cent of the imports into Canada; the people of Canada raise all necessary articles of food, but of course import tea, coffee, and raw sugar. They manufacture cotton and woollen goods, boots and shoes, soaps, paper, sugar, beer, whisky, agricultural implements and edge tools, with a large number of other articles. The following classification of the sources of their exports will show the way in which the people of Canada procure such foreign goods as they require:—

CHIEF EXPORTS 1895-96, SHOWING SOURCES WHENCE DERIVED

Produce of the Mine	\$8,401,760
Produce of the Fisheries	11,183,698
Produce of the Forest	27,324,894
Animals and their products	37,404,396
Agricultural products	19,974,011
Manufacturers	10,222,877
Miscellaneous	473,854

\$112,985,490

The course and tendency of trade relations is shown by the following table more in detail:—

AGGREGATE TRADE (IMPORTS AND EXPORTS) by COUNTRIES

Great Britain	\$99,670,030
United States	103,022,434
West Indies	4,707,243
Germany	6,688,990
France	3,392,482
China and Japan	3,339,429
Exports to Great Britain	\$66,690,208
Exports to United States	44,448,410
Imports from Great Britain	32,979,742
Imports from United States	58,574,024

The following table gives at a glance the foreign trade of each province. The inland provinces, of necessity, do much foreign business through the sea-board cities.

TABLE OF IMPORTS AND EXPORTS BY PROVINCES, YEAR ENDING
JUNE 30, 1896

Imports.	Province.	Exports.
\$46,025,980	Ontario	\$32,866,947
49,341,750	Quebec	55,517,731
8,336,820	Nova Scotia	10,999,160
5,406,648	New Brunswick	7,907,911
2,704,134	Manitoba	2,005,867
5,566,238	British Columbia	10,576,551
490,245	Prince Edward Island	979,979
139,693	North-west Territories	159,706
<hr/> \$118,011,508		<hr/> \$121,013,852

During the last two years the exports have exceeded the imports, and in the last fiscal year the excess of exports amounted to \$3,002,343.

In order to give a clearer idea of the productions of Canada a few of the leading items of export are given. The values are the export values as entered in the Trade Returns.

PRODUCE OF THE MINES			
Coal	\$3,457,465	Lead	\$408,625
Gold	1,099,053	Nickel	486,651
Gypsum	205,641	Silver	1,595,548
Copper	294,230		

The development of the British Columbia mines has been so rapid during the last few months that the statistical officer of the Geological Survey gives the values for the calendar year 1896 at more than twice the above amounts. He puts the gold production alone at \$2,810,206.

PRODUCE OF THE FISHERIES			
Canned Lobsters . .	\$2,149,067	Codfish	\$3,150,180
„ Salmon	2,803,457	Herring	411,386

THE FOREST

Bark and logs	\$1,731,321
Lumber	19,996,803
Square timber	2,852,400

ANIMALS AND THEIR PRODUCTS

Horses	\$2,441,118	Furs	\$1,822,689
Cattle	7,086,822	Bacon	3,802,269
Cheese	14,283,825	Wool	832,797
Eggs	807,090	Canned Tongues	820,605

AGRICULTURAL PRODUCTS

Apples	\$1,465,629	Hay	\$1,976,749
Pease	1,311,211	Maize	1,131,429
Wheat	8,007,957	Tobacco leaf	153,566
Flour	895,148		

A study of the preceding figures will give an idea of the productive capacity of Canada, as shown by its foreign trade. It only remains now to add that the average customs duty, on all imports into Canada, is 18 per cent *ad valorem*, equal to \$3.94 per head.

Financial

The total net public debt of the Dominion is \$258,497,432. The revenue for the year ending June 30, 1896, was \$36,618,590, and the expenditure \$36,949,142. The deposits in the Government savings banks stood on the same date at \$46,799,318, or \$9.13 per head of the population at its latest estimate.

The banking system of Canada is framed upon that of Scotland, and is carried on by a comparatively small number of institutions with large capitals and having many branches, so that every town of importance has one or more banks to assist in developing its trade, while

each branch has the entire resources of the central bank to fall back upon, and its accumulated experience to guide its operations.

The currency of the country is redeemable in gold. There is no mint in Canada, and the ultimate implement of redemption is the sovereign at its legal par value of \$4.87 (4.8666) to the pound sterling. Silver is also in circulation (the coins being minted in England), and is a legal tender to the extent of ten dollars. The currency in actual use, however, is paper, and consists of notes issued by the Government and notes of \$5 and upwards issued by the banks. The Government issues notes of many denominations, but has a monopoly of notes under \$5. The Government notes are legal tender, but are themselves redeemable in gold on demand at the branches of the Treasury in all the large cities. The absolute safety of the notes of all the banks is secured by a percentage on circulation paid to the Government, and held for the immediate redemption of the notes of any bank which may happen to fail. This fund is called the Bank Circulation Redemption Fund, and the Government pays the banks interest upon it while holding it for the security of the public. All bank notes are a first charge on the assets of a bank.

The banks may issue notes to the amount of their paid-up capital, and these must be kept at par throughout the Dominion. They are bound to make monthly statements to the Government, certified under oath, of their assets and liabilities. The statement is in considerable detail, and all loans are classified under heads to show their nature. The reserves are also set forth, with such other information as may have any important general bearing on the bank's business. These statements are published in the Official Gazette. Many other conditions

are laid down in the interest of the public, but these are the most important.

The amount of Dominion notes in circulation in February 1897 was \$21,955,011, and the amount of the bank notes in circulation in the same month was \$30,409,197. The aggregate capital of the banks is \$61,831,391! The largest bank is the Bank of Montreal, which has a capital of \$12,000,000, and a rest of \$6,000,000. It is the largest bank as to its actual capital in North America, the fifth largest in the British Empire, and the eighth largest joint stock bank in the world. The rapid development of the business of the Dominion is shown by the enormous growth of the business of the banks during recent years.

In order, however, to form a fuller conception of the Dominion and the pursuits of its inhabitants it is necessary to give a few figures concerning its manufacturing industries. The following are taken from the census returns of 1891, and although six years old, they will suffice to show the nature of these industries:—

VALUE OF THE ANNUAL OUTPUT OF SOME LEADING MANUFACTURES

Carriages, Railway Cars, and Rolling Stock . . .	\$19,711,581
Sugar Refineries (chiefly in Quebec) . . .	17,127,100
Tobacco Works (chiefly in Quebec) . . .	2,375,321
Cigar Factories	3,367,204
Cordage, Rope and Twine	1,723,534
Meat Curing	7,125,831
Furniture	7,706,093
Boots and Shoes (chiefly in Quebec) . . .	18,990,381
Tanneries	11,422,860
Oil Refineries	2,064,115
Agricultural Implements (nearly all in Ontario) .	7,493,624
Foundries and Machine Shops	16,405,280
Rolling Mills	3,163,930
Soap and Candle Factories	2,151,910
Paper Mills	2,575,447

Pulp Mills	\$1,057,810
Cheese Factories	9,784,288
Saw Mills	51,262,435
Musical Instruments (nearly all in Ontario)	3,363,713
Cotton Mills (nearly half in Quebec)	8,451,724
Woollen Mills (chiefly in Ontario)	8,087,871

TOTAL VALUE OF ANNUAL OUTPUT OF MANUFACTORIES
BY PROVINCES

Ontario	\$239,781,926
Quebec	153,195,583
Nova Scotia	31,043,392
New Brunswick	23,849,655
British Columbia	11,999,928
Manitoba	10,155,182
Prince Edward Island	4,345,910
Territories	1,827,310
Total for Dominion	\$476,198,886

Distances

It will be convenient to record for reference in this connection the distances between some of the chief ports of the world and Canada. The table of Atlantic distances was compiled by Captain Smith, R.N.R., for the St. John, N.B., Board of Trade. The Pacific distances were published by British Columbia government officers.

DISTANCES TO POINTS ON THE ATLANTIC

	MILES
Antwerp to Halifax	2767
„ St. John, N.B.	3017
Belfast to Quebec <i>via</i> north of Ireland and Belle-isle	2521
„ Halifax	2349
„ St. John, N.B.	2590
Cape Race to Halifax	470
„ St. John, N.B.	720
Glasgow to Halifax	2381
„ Quebec <i>via</i> north of Ireland and Belle-isle	2564
„ St. John, N.B.	2631
„ Sydney, Cape Breton	2212

	MILES
Halifax to Portland, Me.	336
„ St. John, N.B.	277
Liverpool to Boston, Mass., <i>via</i> north of Ireland and Cape Race	2807
Liverpool to Boston, Mass., <i>via</i> south of Ireland and Cape Race	2830
Liverpool to Halifax <i>via</i> north of Ireland and Cape Race	2450
„ „ south of Ireland and Cape Race	2475
Liverpool to New York, average distance, mail steamers route	3105
Liverpool to Quebec <i>via</i> north of Ireland and Belle-isle	2633
„ „ „ „ Cape Race	2801
„ „ „ „ south „ „	2826
Liverpool to St. John, N.B., <i>via</i> north of Ireland and Cape Race	2700
Liverpool to St. John, N.B., <i>via</i> south of Ireland and Cape Race	2723
Liverpool to Sydney, Cape Breton	2282
Loch Ryan to Quebec <i>via</i> north of Ireland and Belle-isle	2513
„ Halifax	2330
„ Sydney, Cape Breton	2161
„ St. John, N.B.	2580
Milford Haven to Halifax	2353
„ Quebec <i>via</i> Belle-isle	2587
„ Sydney, Cape Breton	2186
„ St. John, N.B.	2603
Quebec to Montreal (from the Market Wharf, Quebec, to the Allan Wharf, Montreal)	140

DISTANCES TO POINTS ON THE PACIFIC

Liverpool to Hong-Kong <i>via</i> San Francisco	12,883
„ „ „ „ Vancouver	11,649
San Francisco to New York	3266
„ „ Boston	3370
Sydney to Liverpool <i>via</i> Vancouver	12,663
„ „ San Francisco	13,032
Vancouver to Boston <i>via</i> Montreal	3248
„ Calcutta	8987
„ Hong-Kong	5936
„ Honolulu, H.I.	2410
„ Liverpool <i>via</i> Montreal	5713
„ London <i>via</i> Suez Canal	15,735
„ Montreal	2906

Vancouver to New York <i>via</i> Brockville	. . . . .	3163
„ Suva, Fiji	. . . . .	5190
„ Sydney, N.S.W.	. . . . .	6960
„ Yokohama	. . . . .	4283
Yokohama, Japan, to Liverpool <i>via</i> San Francisco	. . . . .	11,281
„ „ „ Vancouver	. . . . .	10,047

NOTE TO CHAPTER III

The following is a list of books in which more detailed information may be found. It is by no means an attempt at a complete bibliography :—

BOURINOT, J. G.

The Story of the Nations. Canada. New York: G. P. Putnam's Sons, 1896.

Recently published, and the most convenient summary of the history of the Dominion.

BOURINOT, J. G.

How Canada is governed.

A short Account of its Executive, Legislative, Judicial, and Municipal Institutions, etc. Toronto: The Copp Clark Company, 1895.

BOURINOT, J. G.

Manual of the Constitutional History of Canada. Montreal: Dawson Brothers, 1888.

CENSUS OF CANADA, 1891. Ottawa, 1893-97.

Four volumes, 1893-7.

DAWSON, G. M.

Elementary Geography of the British Colonies in America. London: Macmillan and Co., 1892.

DAWSON, Sir William.

Handbook of Geology for the use of Canadian Students. Montreal: Dawson Brothers, 1889.

A concise and complete Summary of the results of Canadian Geological Exploration to date.

DAWSON, S. E.

Handbook for the Dominion of Canada, prepared for the meeting of the British Association for the Advancement of Science, at Montreal 1884. Montreal: Dawson Brothers, 1884.

DEPARTMENTAL REPORTS of the Government of Canada. Presented to Parliament annually.

Department of Marine and Fisheries.

Department of the Interior.

Department of Railways and Canals.

Department of Indian Affairs.

Department of Public Works.

These reports always contain matter of general interest not to be found elsewhere.

FERLAND, ABBÉ J. B. A.

Cours d'Histoire du Canada. 2 vols. 8vo. Quebec : A. Côté, 1861.

This was a historical course at Laval University. An impartial and judicious work.

GEOLOGICAL SURVEY OF CANADA.

Report of progress. Summary from its commencement to 1863.

Montreal : Dawson Brothers, 1863.

This volume contains the Geology and Physical Geography of the provinces of Quebec and Ontario. It was published before the confederation of the provinces.

GEOLOGICAL AND NATURAL HISTORY SURVEY OF CANADA.

Annual reports since 1863.

GRANT, GEORGE M., D.D.

Picturesque Canada. 2 vols. 4to., illustrated. Toronto : Belden and Co.

INGALL, E. D.

Annual Report on Mineral Statistics and Mines. Geological Survey. Ottawa, 1897.

KINGSFORD, WILLIAM.

History of Canada. 8 vols. 8vo. London : Kegan Paul, Trench and Co. Toronto : Rowsell and Hutchison.

The most important history yet issued. Two volumes have still to appear.

MCCORD, F. A.

Handbook of Canadian Dates. Montreal : Dawson Brothers, 1888.

MACOUN, JOHN.

The Forests of Canada and their Distribution, with notes on the more interesting species. Trans. Roy. Soc. of Canada. Ottawa, 1894.

MAIR, CHARLES.

The American Bison—its habits, methods of capture, and economic use in the North-west, with reference to its extinction and possible preservation. Trans. Roy. Soc. Canada, vol. viii. 1890.

MILES, H. H.

History of Canada under French Régime. 1 vol. 8vo. Montreal : Dawson Brothers, 1881.

PARKMAN, FRANCIS.

Series of Historical Works on Canadian History. 10 vols. 8vo. Boston : Little Brown and Co., various dates, 1865-84.

These admirable books should be read by every one interested in Canadian history. Mr. Parkman devoted his life to the subject.

ROWAN, J. J.

The Emigrant and Sportsman in Canada. Some experiences of an Old Country settler, etc. Montreal : Dawson Brothers, 1881.

SELWYN, A. R. C.

The Dominion of Canada and Newfoundland. London : Edward Stanford.

SELWYN, A. R. C., and DAWSON, G. M.

Descriptive Sketch of the Physical Geography of the Dominion of Canada. Montreal : Dawson Brothers, 1884.

Statistical Year Book, The, of Canada (published annually, George Johnson, Statistician). Ottawa : Government Printing Bureau.

STUPART, R. F.

Annual Reports of the Director of the Meteorological Service of Canada. Last issue is for 1890. Ottawa : Government Printing Bureau, 1896.

Monthly Bulletins issued every month.

SULTE, B.

Histoire des Canadiens Français. 8 vols. 4to. Montreal : Wilson and Co. 1881.

An important work containing a great deal not found in other histories. The form of publication is, however, inconvenient.

TYRELL, J. B.

The Mammalia of Canada. Proc. Canadian Institute. Toronto : 1888.

WITHROW, W. H., D.D.

History of Canada. Toronto : William Briggs, 1888.

CHAPTER IV

HISTORY OF ACADIA

THE histories of the three maritime provinces are inextricably interwoven. To the general reader, familiar with narratives of the rise and fall of great empires, the theatre may seem small and the number of combatants insignificant, but the great duel between France and England commenced in the forests and harbours of Acadia, and there two different systems of colonisation came into the strongest contrast. The French system failed because the king was a human being and had not supernatural powers of controlling events occurring in a world utterly remote from anything he or his courtiers could conceive of. The French Government had regard primarily to the interests of France. The English Parliament were always content if the colonies did not trouble them with their existence, and the colonists carried on their affairs primarily in their own local interests. There was no science or political wisdom about it, but the English colonists, living in the country, did what seemed necessary to be done, while the French officials were toiling to get the truth out of voluminous and contradictory reports. The English Parliament meddled more with Newfoundland than with any other colony in America, and the result is manifest now to all.

The combatants were indeed few in number, but the stake was one of the greatest that was ever fought for by two great nations. Had there been a succession of kings of France like Henry IV. all North America would probably have been at this moment French, and the English people would be in the ideal position coveted by some of their own statesmen: shut up in the two islands to manufacture generally for well-disposed foreigners. The battle on the heights of Quebec was one of the great decisive battles of the world, and the first skirmish of the conflict opened in Acadia.

The history of Acadia commences far back in the times before the pacification of King Canute, during the great overflow of the Scandinavian people. Step by step they passed over the western ocean to Iceland in A.D. 874, to Greenland in A.D. 986, and to Acadia in A.D. 1000. Concerning this there can now be no dispute. The Icelandic records are admitted to be genuine, and it is now conceded that Helluland, Markland, and Vinland were places on the north-east coast of America. Whether we take Helluland to be Labrador or Newfoundland, whether Markland be Newfoundland or Nova Scotia, or whether Vinland be Nova Scotia or New England, on any theory yet propounded by scholars some part of Nova Scotia was seen by the Northmen in A.D. 1000.

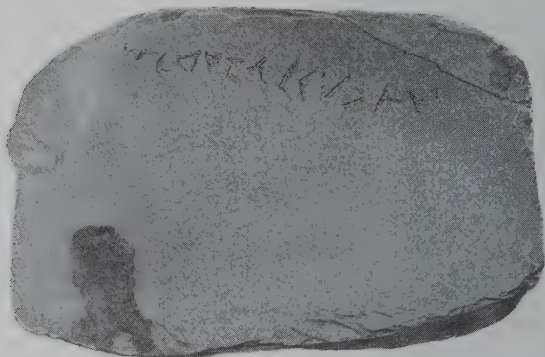
There is nothing in the Norse voyages to America beyond the ordinary achievements of these daring sea rovers. From Greenland to Labrador is the same distance on the chart as from Iceland to Scotland, and less than the distance from Iceland to Norway; and whether Leif Ericson sailed from the east or the west coast of Greenland, he would equally have had the assistance of the Arctic current flowing on both sides of Greenland, to impinge on the Labrador coast and follow down the coast

of Newfoundland and Nova Scotia. It is sailing down hill all the way. The ships of the Northmen were fitted to contend with the stormiest seas; for, from Norway or Iceland, across the Bay of Biscay and into the Mediterranean sea, was a very frequent course of their piratical expeditions. No more formidable seas are encountered in the North Atlantic than those around the north of Scotland and Norway, in the Bay of Biscay and on the Atlantic coast of Spain. Their ships could make use of oars as auxiliary to their square sails, and this was of much assistance in their long coasting voyages.

The scope of this volume will not permit of a discussion of these early Norse voyages to America. It is sufficient to point out that three steps upon the coast are plainly indicated. If Labrador be the first, Newfoundland is the second, and Nova Scotia the third. If, however, Newfoundland be the first, Nova Scotia is the second, and New England the third. It might well be that some part of Newfoundland was indicated by the word Helluland. In the saga of Eric the Red Leif Ericson is said to have given the name on the spot because of the appearance of the land. In Rafn's *Antiquitates Americanæ* the passage is translated from the Icelandic: *jam terræ nomen imponam et Hellulandiam (terram saxæ planitie) appellabo*. This is not, as often translated, a land of flat stones, but a land of stony flatness. So far as the name is concerned (and there can be no higher authority than Rafn for the meaning of it) it would apply to a long stretch of coast near Cape Race. The very earliest Portuguese sailors on the coast were struck by the peculiar appearance of that headland, and called it *Cabo Raso*—the flat cape. At p. 14 is a cut of this cape, taken from a photograph. The name appears on the King map of 1502 and has continued to this day. Much of the coast in that part of Newfound-

land is rocky table-land of the same character. One merit of this theory is that it will enable Leif Ericson to have reached Boston, where a statue has been erected to commemorate his visit.

Turning away with reluctance from this enchanted region of American history, it must be observed once more that Nova Scotia is clearly within the scope of these voyages, whether it be taken as Vinland or Mark-



STONE FOUND NEAR YARMOUTH, WITH SUPPOSED RUNIC INSCRIPTION.

land, and as, upon the coast of Massachusetts, the famous Dighton rock with its inscription, convinced Professor Rafn and some other scholars of the former presence of the Northmen, so near Yarmouth, Nova Scotia, a rock inscribed with characters supposed to be Runic was found at the end of the last century, and has been the subject of speculation among those who are interested in the pre-Columbian discovery of America. As a matter of antiquarian speculative interest, and because it has not often been reproduced, a cut of the inscription is given above. The rock is about two feet thick, with one smooth surface, and was found at high-water mark on

the shore of a small inlet at the head of the harbour. Whatever these characters may be, or may mean, the curious inquirer may be sure that they are genuine and that no fraud has been practised. The inscription was never deciphered until a copy was sent to Mr. Henry Phillips, an antiquarian scholar of Philadelphia, who, after a study extending at intervals over nine years, read it, *Harkussen men varu*, "Harko's son addressed the men." He made it the subject of a communication to the American Philosophical Society in 1884, and connected it with Hake, a Scotchman, who was with Thorfinn on the voyage of A.D. 1007.

Without expressing any opinion as to either this or the Dighton rock, and referring those readers who may be interested in the subject to the authorities cited at the close of this chapter and to the rock itself, which is carefully preserved at Yarmouth, it is necessary to pass on to the voyages of the Cabots in 1497 and 1498. The landfall of the first voyage has been the subject of a long controversy as to whether it was at Labrador, Newfoundland, or Cape Breton. The present writer has elsewhere stated the reasons of his conviction that the landfall was at the east point of Cape Breton, which has given its name to the whole island. It is sufficient to observe that beyond all question Cabot in the second voyage, that of 1498, coasted along the shores of Acadia, New England, and Virginia; and upon these voyages the English always based a claim by discovery upon the mainland of America. It is necessary to remember that such claims must be read in the light of the notions of international law existing at that period.

The voyage of Verrazano in 1524, under a commission from Francis I. of France, has also been the subject of controversy, and has been disputed, but without reason-

able grounds. Upon this voyage the French founded a right of discovery from 30° to 46° north latitude. In 1525 Estevan Gomez, a Portuguese sailor in the employ of Spain, sailed along the coast from Florida to Cape Race, and the Spaniards also laid claim to the territory up to 45° by discovery, although they did not press it as against the Portuguese, inasmuch as the vague geographical notions of the day drew Acadia and Newfoundland east of the line of demarcation of Pope Alexander VI.

The more closely the early records are searched the clearer it will appear that the Portuguese and French were the first to resort regularly to the shores of Acadia and the first to make attempts at settlement. The early nomenclature of the coast bears witness to that, for French and Portuguese names still linger along its whole length. To these must be added the Basques, Spanish and French, who were the most daring and skilful sailors of that age. As late as the treaty of Utrecht the king of Spain made claim to a share in the fisheries of southern Newfoundland for the Basques of Guipuzcoa. From the year 1504 French vessels from St. Malo, Dieppe, and La Rochelle frequented the Acadian harbours and those of southern Newfoundland. In 1607 Champlain met on the coast an old sailor called Savalet from St. Jean de Luz, who had made forty-two voyages to Acadia. Lescarbot called the harbour where the old sailor was fishing, Savalette. It was the present Whitehaven. The English probably resorted more to Newfoundland, for there are no clear records of their being on the Acadian coast at so early a date. From the earliest times the kings of Portugal claimed sovereign rights there, not only under the Bull of Pope Alexander, but because of the voyages of the Corte Real family in 1500-1 and 1502; and in 1521 the Portuguese court

made a grant along the coast of Acadia to Joam Alvarez Fagundez, who would seem to have made some attempt to settle. Gradually, however, the Portuguese withdrew; for their richer possessions in the east absorbed their energies, and the sixty years' domination of Spain cramped their enterprise.

In 1534 and 1535 Jacques Cartier, under a commission from Francis I., discovered the Gulf of St. Lawrence, and sailed around it and up the river to the site of the present city of Montreal. Not only did he coast along Labrador and the western shore of Newfoundland, but he discovered the islands in the Gulf and touched the north shore of Prince Edward Island the gulf shore of New Brunswick, and the shores on both sides of the Bay Chaleur. He was the unwitting discoverer of Prince Edward Island, for he thought it was part of the mainland. The idea that Cabot discovered it is an afterthought of recent years without solid foundation. Neither Cabot, nor Corte Real, nor Verrazano, nor Gomez, nor Fagundez, can be shown to have penetrated either the Bay of Fundy or the Gulf of St. Lawrence; and until Jacques Cartier's discoveries were made known, the maps of America were drawn in such a way as to prove that nothing beyond the Atlantic coast was known.

As the English did not follow up the discoveries of the Cabots for a long time so the French did not follow up, by permanent settlement, the discoveries of Cartier; nevertheless fishermen and traders, unknown to fame, continually frequented the coasts and, year by year, the maps became more accurate from their reports. In the meantime the whole energies of the European governments were consumed in religious wars and internal dissensions. What went on in American waters is shown by one salient

fact. The coast of Cape Breton was the favourite fishing resort, and the old name for Louisbourg was Havre aux Anglais, and for Sydney, Havre aux Espagnols, while St. Anne's Bay was the resort of the French. The fishermen fished in peace, and the different nationalities resorted to different harbours. There were harbours and fish enough for all.

France emerged from her troubles when Henry IV. was settled firmly on the throne, and with his characteristic breadth of mind he recognised the importance of western plantations. In 1603 he gave to M. de Monts a commission as governor of the country of *La Cadia* from 40° to 46° north latitude (from Philadelphia to Newfoundland). In like manner the English monarch, James I., following his example, granted a charter to two companies to settle "Virginia," extending from 33° to 46° north latitude, that is from South Carolina to Newfoundland, thus the whole coast of America, north of the part generally conceded to Spain, was claimed by both powers before either had sent out a single permanent settler. In 1620 King James granted the country under the name of New England, from the 40th to the 48th degree, in absolute property to a company of noblemen. It is not necessary to follow farther the history of these overlapping charters, except to point out that Acadia was claimed by the English as a part of northern Virginia, or New England, and King James again, in 1621, set off from the New England territory, under the name, then first used, of Nova Scotia, all the country known as Acadia from the St. Croix to Gaspé inclusive. The grant was made to Sir William Alexander, Earl of Stirling, although at the time the French were actually settled at Port Royal, Tadoussac, and Quebec.

To return, however, to the grant of Henry IV. of 1603 :

—in the following year de Monts sailed with two ships, and with him were the Baron de Poutrincourt, Hebert, Pontgravé, and Champlain. Concerning the last many things will require to be said elsewhere, for he is the true hero of Acadia as well as of Canada. They sailed along the coast of Nova Scotia, and most of the names they gave still survive. La Hève, Port Mouton, Cape Negro, Cape Sable, Long Island, St. Mary's Bay, and many others, are either names then in use or given by de Monts and Champlain. The Bay of Fundy was named La Baie Française by de Monts and the name persisted on the French maps. Champlain visited Annapolis basin and sailed up to the head of the Bay of Fundy. He visited and named St. John harbour, because he arrived there on St. John's day, and went on to the river Schoodic or St. Croix. On an island in this river, now called Neutral (Douchet) island, de Monts built a fort, and the Boundary Commissioners in 1798 found its remains and thus identified the Schoodic river as the true St. Croix. There de Monts passed a very uncomfortable winter. The next spring the whole party moved across the bay to the Annapolis basin. Champlain had been charmed with this basin, and it was named Port Royal. There they settled, and thus, in 1605, was made the first permanent settlement of Europeans north of St. Augustine, for although the grant to de Monts was cancelled in 1607 and the adventurers returned to France, yet it was renewed in 1610, and they came back and found all their buildings just as they had left them.

Two years later, in 1607, Jamestown in Virginia was founded. It should be noted, however, that the first Port Royal, that of de Monts and Champlain, was not on the site of the present Annapolis but lower down on the Granville side opposite Goat island. The Baron de

Poutrincourt was so delighted with the place that he procured a grant of it from de Monts and made up his mind to settle there for life; for the French of those days could live happily out of reach of Paris. Game was plenty, the Indians were friendly, and the adventurers were full of resources.

After spending in all three and a half years in Acadia, Champlain on his return gave up his Acadian connection to found Quebec; but Poutrincourt brought his son out and continued the enterprise. Lescarbot, a clever Paris lawyer, was out for a while. He wrote an account of the country, and the first American poetry was *Les Muses de la Nouvelle France*, meditated if not written at Granville on the Annapolis river. The little colony had many difficulties but it gave promise of success.

There was peace at that time between England and France, but the colonists at Jamestown, when they heard of a settlement at Port Royal, sent Samuel Argall with three ships to destroy it, under the pretext that it was within the limits of the grant of northern Virginia. He burned the houses, and the French took refuge with the Indians in the woods. Whatever colour of reason may have existed for the destruction of St. Sauveur on the coast of Maine, the French were clearly within their right at Port Royal, and with this wanton and unjustifiable act commenced the struggle for supremacy in the new world. Poutrincourt, ruined in fortune by the failure of his colony, was killed in battle in Europe, and his son Biencourt took his name, and it has been generally supposed that with some companions he lived with the Indians in different parts of Nova Scotia until his death, but recent researches have thrown doubt upon this.

Sir William Alexander in the meantime was making unsuccessful attempts to utilise the grant of 1621 when

King Charles first instituted, in 1625, the order of Baronets of Nova Scotia, and commenced to regrant the country in tracts six miles long by three wide. The western boundary of his charter of 1621 was that intended by the treaty of 1783, and is so far of interest, otherwise all these documents only demonstrate the prevailing ignorance concerning the country. The younger Poutrincourt had in some way conveyed to his favourite companion, Charles de La Tour, all his rights in Acadia, and his command as governor for the king of France, when Kirke, in 1628, took possession of Port Royal for Alexander, and planted there a colony of Scotch settlers, without however troubling the other small posts the French had in Acadia. Charles de La Tour was then residing at Port La Tour near Cape Sable, and his father, Claude de La Tour, had gone to France to obtain a confirmation of his son's command. The elder La Tour was taken prisoner while returning to Quebec in Roquemont's fleet, and sent to England, where he forgot his nationality, married an English lady of rank, and undertook to hand over all Acadia to the English. Sir William Alexander appointed him and his son baronets of Nova Scotia, and, reserving to himself Port Royal, he transferred to the La Tours his remaining rights in Acadia. The son, however, resisted all the entreaties of his father, held to his allegiance, and defeated an English force led by his father to take the fort at Port La Tour. The fate of the Scotch settlers is obscure. Some were killed by the Indians, and some married and were absorbed among the French and natives, and some doubtless returned when the country was given up, for in 1630 the treaty of St. Germain en Laye conceded to France all Acadia, Cape Breton, and Canada, and closed the first chapter of Acadian history.

The second chapter opens with the arrival of a very distinguished officer, the Commander Isaac de Razilly, allied to the family of Richelieu. He was appointed lieutenant-general in New France for the king and for the Cardinal de Richelieu, with a grant for himself of the river and bay of St. Croix. There came with him two men,—Nicholas Denys, Sieur de Fronsac, and Charles d'Aulnay de Charnisay,—and he found in Acadia Charles de La Tour. The history of Acadia during a long period is nothing beyond the history of these most capable and energetic men. Razilly fixed his residence at La Hève, and appointed Charnisay and La Tour his lieutenants. The peaceful Denys established a shore fishery in partnership with Razilly at Port Rossignol (now Liverpool), and La Tour received a grant of the territory at the mouth of the St. John river. There he built a fort known as Fort La Tour, and founded a large fishery and trading establishment. It was in the harbour of the present city of St. John, New Brunswick, but its precise site is disputed by antiquaries. Charnisay's lieutenancy was along the coast of New Brunswick and Maine, and La Tour's was in Nova Scotia, but La Tour's grant on the St. John was expressly excepted from Charnisay's jurisdiction.

De Razilly seems to have died in Acadia, and an internecine feud broke out between his two lieutenants. Both were confirmed in their governments by the court of France, but Charnisay had strong family influence in France. Both were supported by companies of merchants with which they were connected in their fishing and trading concerns. Charnisay was bold and haughty, and made aggressions on the New Englanders. He seized Pentagoet at the mouth of the Penobscot and fortified it; and maintained himself there, making it his chief place

of residence. On Razilly's death he inherited the establishments at Port Royal and La Hève, and he removed the former to the site of the present Annapolis. These establishments were excepted from La Tour's jurisdiction, so that Charnisay's posts were exemptions in La Tour's government and La Tour's post was an exemption in Charnisay's government. La Tour's family was Huguenot, and although Charles de La Tour was a Catholic his relations with the English were more friendly than those of Charnisay.

The quarrel between these two lieutenants of the French king assumed the intensity of a war, and many romantic and interesting incidents occurred which are related in the histories. Madame de La Tour joined her husband at Fort La Tour in 1645 bringing supplies, and Charnisay, finding out that La Tour had gone on an expedition with most of his men, suddenly appeared before the fort and summoned it to surrender. But Madame de La Tour defended the place with a handful of men for four days, until one of the garrison, corrupted by Charnisay, turned traitor. Even then she held out and obtained honourable terms of surrender. When Charnisay got possession of the place he violated his promise and hanged all the garrison save one whom he forced to act as hangman. He compelled Madame de La Tour to witness, with a rope round her neck, the execution of her followers. Three weeks after the lady died broken-hearted with grief, and Charles de La Tour retired to Boston a ruined man. For five years Charnisay ruled alone in Acadia and distressed the settlers by his harsh rule. In 1650 he died, and in a short time La Tour was established in his government and married his widow.

But there was not yet peace for Acadia. One Le Borgne, a merchant of La Rochelle, was a creditor of

Charnisay, and he proceeded to harass La Tour and Denys who succeeded to the conduct of affairs by processes and seizures. Denys had obtained from the government at Quebec a grant of all the shore from Cape Rosier in Gaspé to Cape Canso in Nova Scotia. He had establishments at Chedabucto (Guysborough) and at St. Pierre and St. Anne's Bay in Cape Breton. It was he who first discovered and made use of Cape Breton coal. An expedition under Le Borgne seized him, plundered his chief post at St. Pierre, and forced him to retire to Chedabucto. Under such circumstances as these Acadia could not prosper, and in the midst of all these contentions, while the French courts were considering the claims and the French ministers were considering the reports, Cromwell sent an expedition under Sedgwicke in 1654 and seized the whole country; together with M. Le Borgne at Port Royal—thus closed the second chapter.

In 1656 a grant was made of Acadia to Sir Thomas Temple, William Crowne, and Charles de La Tour; for La Tour had laid his case before Cromwell, showing in full all his claims by inheritance and marriage. Their justice was acknowledged and he was associated in the patent with Temple and Crowne. Weary of strife, he sold his interest to his associates and settled on a small holding where he passed ten quiet years until his death in 1666. Acadia was governed by Sir Thomas Temple until, by the treaty of Breda in 1667, it was again restored to France by Charles II., sorely against the will of the New England people. This closed the third chapter of Acadian history.

Acadia was now under French rule once more. Governors were sent down from Quebec, and the officials carried on their petty disputes in a double series of recriminatory despatches to headquarters. The governors

resided at first at Pentagoet and St. John. The settlers were oppressed by the monopolies of the trading companies, and no attempt was made to reinforce the colony by sending out new settlers. The Intendant, De Meules, who visited Acadia in 1686, was shocked by the desolation he saw. The New England people encroached on their fisheries, and there was no force to protect them from the pirates who harried the coasts. In 1689 William III. became king of England, and war broke out with France, and, as always, the poor Acadians had to bear the brunt of it. Sir William Phips, with an expedition from New England, seized and plundered Port Royal and the other posts, but did not retain military possession of the country, although the colonists of Massachusetts claimed it as theirs. The French governors retired up the St. John river to Jemseg and then to Nashwaak opposite the present Fredericton; from thence they incited the Indians to attack the English colonies, and the most atrocious cruelties were practised all along the frontier. The colonies had gained great strength and the French were weak, but the Micmacs, Malicetes, and Abenakis were numerous and they hated the English colonists, whom they called "Bastonnais." The English frontiers were wrapped in fire and blood. The tomahawk and scalping-knife were busy, and midnight attacks and massacres were continual. The Massachusetts colonists were exasperated to madness and retaliated upon the Indians with desperate energy, and adopted, moreover, some of the methods of their savage enemies. Frontenac was also harassing the back settlements from Canada in the same way. The English colonists felt the French hand behind all these attacks and the antagonism of Puritan and Catholic intensified the feeling. All this prepared for the Acadians the

unique tragedy which they were to endure in after years. An expedition under Iberville appeared on the coast and reconquered their posts, but privateers and pirates still harried them and, although Port Royal was fortified, the farms were uncultivated and famine even threatened the people. At last in 1710 General Nicholson, with a formidable expedition from Boston, attacked and carried Port Royal and seized the whole country. This time the conquest was final. The remonstrances of the New England colonies were successful and, at the treaty of Utrecht, the whole of Acadia "in its ancient limits" was ceded to the English, and the French retained only Cape Breton and the islands in the Gulf. The fourth chapter of Acadian history closes also with disaster.

At the period of the treaty of Utrecht there were no settlements on the island of Cape Breton, save the fishing establishments, under the grant to Denys, at St. Anne's Bay and St. Peter's. When the French Government relinquished Newfoundland and the mainland of Acadia it resolved to found a first-class fortress on the island to guard the gulf and give a firm foothold for the power of France in America. The place known as English Harbour was chosen, its name was changed to Louisbourg, the island was called Île Royale, and during the following years over thirty millions of livres were expended by the French Government in fortifications. All the inhabitants of Placentia in Newfoundland but four removed thither. Few of the Acadians, however, could be induced to settle anywhere on the island. They were not sailors and did not care for the fisheries; they were farmers, and Cape Breton did not attract them.

Prince Edward Island was then called Île Saint Jean. For a long period it was not recognised as separate from the mainland. Even as late as 1600 it was not known,

and on Champlain's two first maps it does not appear. In his voyages of 1603 he seems to have heard of such an island, and on his map of 1613 he has laid down a very small island with that name, but it was not until 1632 that it appeared in its proper situation and proportions. It is, no doubt, the fact that on the so-called Cabot map of 1544 there is an island in the gulf named St. John, but that has been shown to be in reality the Magdalen group, and the map itself is clearly based on Cartier's discoveries. Cartier, as before stated, touched the north shore of the island, but it has been demonstrated that he passed over to the Miramichi shore, supposing the strait to be a deep bay. In 1663 the company of New France made a concession of the island of St. John, the Magdalens, Brion island, and the Bird islands to Doublet, and a company was formed to carry on the fisheries. It was to be a sub-fief to the Miscou company and the fur-trade was reserved. Later, in 1720, these islands, together with Miscou, were granted to the Count de St. Pierre, but there appear to have been no settlements on the island of St. John at that time. Attempts were made with more success to induce the Acadians to settle there, and towards the year 1729 a little colony was formed, at Port La Joie on the site of Charlottetown. The Acadians removed very slowly, but, about 1733, as Louisbourg attained strength, a garrison was sent and a fort and barracks were erected at Port La Joie. After the dispersion of the Acadians many settled on the island, so that in 1758, when the French evacuated it, about 4000 souls were left. They had been scarcely three years there when the fortune of war again compelled them to leave.

In the treaty of Utrecht, when Acadia was ceded, it had been stipulated that the Acadians were to have

liberty to remove elsewhere within a specified period with all their effects, but the documents show that the English did not wish them to remove, and threw obstacles in their way. The reasons are stated plainly. They did not wish them to go to strengthen the new and threatening establishment on Cape Breton, and, moreover, if the Acadians left, supplies would fail to the garrison at Port Royal; for English farmers could not be got to settle in a country infested by Indians so bitterly hostile to the English name. A few left, but by far the greater part remained on their farms and increased in numbers and prospered under English rule more rapidly than under the government of the French court. The position was, however, a very difficult one. The Acadians were the only inhabitants, excepting the Indians, and although they never had experienced any trouble from the Indians, it was because they remained French. The Indians were controlled entirely from Canada and Cape Breton, and, if the Acadians had taken an active part against the French, beyond doubt the Indians would have massacred them, for the only force the English had in the country was about 200 men in garrison at Annapolis, and in later years a small garrison at Canso. Moreover, the Acadians were Roman Catholics of the intensest kind and received all their impressions through their missionaries, who were sent from Quebec. They had no schools, and were so ignorant that, in a document signed by 227 of the heads of families in Annapolis, 160 signed with a cross, being unable to write. Not knowing what was going on in the world, save through Quebec, they expected that as Acadia had always been restored to France before, it would be so again, and besides, in their simplicity, they could not imagine that any other power equal to France existed in the world, and to take part against their own Catholic

mother-land on behalf of a heretical people was utterly abhorrent to them.

On the other hand the English—and by English must chiefly be understood the colonists of Massachusetts—had suffered greatly from the Indian tribes which the French in Canada had incited to harry their frontiers. In their common conversation the French and Indians were always grouped in one phrase, and as they were Puritan Protestants of the most intense type they looked on the French with aversion, while for the Indian allies of the French no words the English language possessed were sufficiently strong to express their abhorrence. They looked with suspicion on the missionaries and their connection with Canada, and they endeavoured to exact an oath of allegiance from the Acadians, which the latter were obstinate in refusing to give. At last, after many difficulties, General Phillips, the governor, obtained from them a modified form of oath, which was accepted with an understanding that they were not to be called upon to bear arms against the French or Indians. This oath, though the home authorities at first considered it not quite precise enough, was nevertheless accepted, and so the Acadians came to be called “the neutral French.” The understanding that their allegiance was a limited one is nowhere recorded, but that it had some basis is evident from the sequel of events.

They lived peaceably on the whole with the New England garrison, although occasional friction would arise between the governors and the priests; but the Indians, incited by the Canadian and Cape Breton French, kept up an incessant warfare, and when the English complained the French commanders affected to consider the Indians as independent nations.

War broke out between England and France, and the

French and Indians made several unsuccessful attempts to take Annapolis, until the New England colonies, exasperated beyond endurance, undertook the hazardous enterprise of attacking Louisbourg. They raised an army solely of provincial troops and put a merchant of Kittery, William Pepperrell, in command. At the last moment, and after the expedition had sailed, the English admiral joined it, and the singular spectacle was presented of a colonial army assisted by an English fleet attacking a first-class fortress containing a garrison of regular troops, and all without orders of the British Government. It was an impromptu enterprise, but fortune favoured the courage of the New Englanders, and religious enthusiasm made it a veritable crusade. The New England troops, 4000 in number, landed on 1st May, 1747. Admiral Warren intercepted succour from France and attacked the town with his ships and on the 17th of June the place surrendered. The garrison and inhabitants were sent to France. There were 650 regular troops, 1310 militia, and 2000 inhabitants in all surrendered. It was a very brilliant feat of arms for men whose experience had been gained only in border warfare and bush-fighting. The New England troops remained to garrison the place. The island of St. John was also seized and the inhabitants sent to France.

Stung by the mortification of a defeat by colonial troops, the French Government fitted out a formidable armament for the recapture of Louisbourg and the conquest of Acadia. It consisted of 70 sail. There were 11 ships of the line, 20 frigates, 5 bombs, and the remainder were transports conveying 3150 regular troops, all under the command of the Duke d'Anville, an experienced and capable officer. But the stars in their courses fought against him. He encountered storms of

great severity. His fleet was scattered. Some ships were disabled and were captured in trying to return, some were wrecked, and the remainder reached Chebucto harbour (now Halifax) shattered by a passage of ninety days. The duke died four days after his arrival and the next in command killed himself. Pestilence broke out among the troops and sailors and was communicated to the Indians who had flocked round to co-operate. More than one-third of the whole Micmac tribe perished. Twelve hundred and seventy men had been lost at sea, 1130 had been buried at Chebucto, and all the rest were weakened by disease. The remainder of the fleet returned to France but received further damage in a terrific gale off Cape Sable. So a great danger was averted from the British colonies, and they were saved without striking a blow for themselves.

By the treaty of Utrecht Acadia or Nova Scotia, in its ancient extension, had been ceded to England, but the French Government drew a distinction and insisted that the territory ceded included only a part of the peninsula, now Nova Scotia, and not any part of what is now known as New Brunswick. They drew an imaginary line from Cape Canso to the head of the basin of Minas (now Truro) and sought to shut out the English from the richest part of the peninsula. On the declaration of war in 1744, an expedition from Louisbourg seized the English fort at Canso, and a large body of Indians under French leaders attacked Annapolis before the English had received intelligence of hostilities.

And now, when the supreme crisis of the struggle for empire in America was imminent, and the anomalous political relations existing in Acadia were to undergo the severest strain, appeared the evil genius of the Acadian people—the Abbé Le Loutre, missionary to the Micmacs

on the Shubenacadie. If the Acadians had been let alone they would gradually have become reconciled to English rule, for they were naturally a peaceful and contented people. They had increased in number and, secure from the oppressive monopolies of the former régime, had prospered greatly. They paid no taxes and enjoyed absolute freedom of religion. The handful of soldiers in the ruinous fort of Annapolis were the only English among them; for British settlers were deterred by the incessant incursions of the Indians. Le Loutre at first resided at Cobequid (Truro). His immediate care was a band of 200 Indians, but his influence extended over all the Miamaes. He afterwards removed to Chignecto on the border of the territory then in dispute and, provided with abundant resources from Canada and France, he exercised complete control over the Indians, and by their assistance induced or terrified the Acadians on the border to take up arms against the British Government.

In 1748 peace was declared, and the English Government, resolving to colonise Acadia, sent out in 1749 a strong colony and laid the foundations of Halifax at Chebucto. The governor, Colonel Cornwallis, then called upon the Acadians to take an oath of loyalty to the English crown. This they flatly and persistently refused to do, in spite of repeated urging, unless with the reserve that neither they nor their heirs should be called upon to bear arms against the French or their Indian allies. One sentence in an address, signed by 1000 of the chief men among them, expresses the real underlying idea: "What causes us all very great pain is that the English wish to live amongst us. This is the general sentiment of the undersigned inhabitants." But the English could not understand such a feeling, for Acadia had been ceded to England for thirty-six years.

The Acadians at Chignecto had renounced allegiance to the English, and when the governor sent a force under Lawrence to reduce them to obedience, they burned their houses under the orders or threats of Le Loutre and retired across the Missiguash to join the force from Canada under the Chevalier de La Corne, which had built Fort Beauséjour on the other side of the river, and Fort Gasperaux on the shore of the gulf at Baye Verte. The next spring Lawrence returned with a thousand men and built Fort Lawrence on the Nova Scotia side of the Missiguash. The Abbé Le Loutre with his Indians and Acadians opposed his landing, but, after a sharp skirmish, Lawrence was successful, and the Abbé with his following retired across the river, where the French troops stood ready to receive him.

There was ostensibly peace at that time between England and France, but Le Loutre carried on, with his Indians, incessant attacks on the English; and the French governors, when appealed to, protested that they had no power over the Micmacs, who were an independent people. These incursions exasperated the English beyond measure; for they consisted in scalping detached settlers and their families around Halifax or Dartmouth, or any soldier who might stray beyond the palisades of the forts. These attacks were secretly encouraged by the French commanders, and a letter from the Intendant at Louisbourg to the minister at Paris reports that the Indians were continually harassing the English and had brought to Fort Beauséjour eighteen English scalps, for which Le Loutre had paid them 1800 livres. Le Loutre had been to France, and was supplied with abundant funds for his work. He so far lost all sense of moderation as to write to the English governor and offer to divide the peninsula with the English, the Micmacs to have what was really

the richest part of Acadia on which English forts were then existing. In all these matters Le Loutre was acting contrary to the instructions of the Bishop of Quebec, who warned him of the wickedness and danger of compromising the Acadians.

In 1755 the decisive war broke out, and at first fortune favoured the French in the west; but, in Acadia, Colonel Moncton captured Fort Beauséjour. Three hundred Acadians were taken, but the Abbé Le Loutre escaped to Quebec. He had to bear the reproaches of his bishop for the ruin he had brought on the Acadians. He was not, however, solely to blame, for the French commanders and the government had supported him, but he was a missionary priest and had disregarded the injunctions of his ecclesiastical superior.

While the English were exasperated by these proceedings, the news of Braddock's defeat and the failure of the western campaign arrived. The idea that nothing but the deportation of the Acadians would secure the safety of the frontier had previously suggested itself to Governor Shirley of Massachusetts, but it had not been entertained. The final resolution was taken by Governor Lawrence and his council at Halifax in July, 1755, upon the occasion of another formal and unanimous refusal of deputies from all the French settlements to take an unqualified oath of allegiance to the king of England. It must have been a sudden resolution, for the governor had received no orders from England. He had not formally proposed it, although in one of his letters he expressed an opinion that the Acadians were better away if they would not take the oath, but he added he would do nothing without submitting it to the approbation of the British Government. That approbation cannot be found, nor even any definite submission of a plan to the English authorities.

The resolution was concealed until the Acadians had got in their crops, and then the blow suddenly fell. Without inquiry, guilty and innocent together, the people were suddenly seized and put into transports and despatched to the different English colonies. No preparation had been made for their reception, and some of the colonies refused to receive them. Families were separated, and many were never reunited on this earth. Many died of privation, exposure, and sorrow. In Acadia the dykes were cut and the houses burned, and the English found themselves alone in the province. The charge that the New England colonies instigated the measure in order to obtain the lands of the exiles is without foundation; for it was a long time before settlers could be induced to take up land in a province so harried by Indian scalping parties. The settlers began to arrive in 1760, and they came slowly, for there was an abundance of land in all the colonies.

Nothing in history is precisely like this pitiful exile, for it was not the outcome of religious intolerance. There never was a question of the free exercise of the Catholic religion, excepting such apprehensions as might be suggested to a simple and pious people by emissaries who sought to shake their fidelity. Their ignorance was profound, and while they may have had the petty faults of peasants shut out from all real knowledge of the outside world, the large majority of them were innocent of treason to the English. Their longing for their Acadian homes was like that of the Jews by the waters of Babylon. Many found their way back coasting along the shores of the colonies. Many hid in the woods or escaped to Miramichi and the islands of the gulf. After the peace they settled near Digby and Yarmouth and around St. Mary's Bay. There are settlements of Acadians

also at Chezzetcook in the eastern part of the province, and along the north shore of Prince Edward Island, and in New Brunswick, especially on the Madawaska. Wherever they are found they retain their old simple habits and manners.

All that can be said in respect to this tragedy must be in palliation, not in justification. The English Government is clear of blame, for nothing has been found to show its complicity in the matter. The English colonists, however, are not alone to be charged with cruelty. It was cruel in the French Government—in the French commanders—to use this simple people for their political purposes, and exploit their blind attachment to their king and their religion for temporary political ends, and thus bring down upon them the anger of a race not easily appeased when thoroughly aroused. Those, however, who care to take all the circumstances into consideration may look to Alsace and Lorraine, and to Savoy and Nice, and ask how long the French and German Governments would, even at the present day, endure it if the people of those provinces were to declare themselves neutral when war was on their borders! Still, if such a measure as this were indeed necessary for self-defence in time of war, the fate of the exiles might have been greatly softened without prejudice to the result.

The events recited in the pages just preceding are well summarised in the following figures showing the movement of the Acadian population on the peninsula:—

1714. Population when ceded to England	. . . . .	1773
1737. Population under English rule	. . . . .	7598
1749. Population under English rule estimated at	. . . . .	13,000

after the troubles about the oath commenced—

1752. Population depleted by emigration	. . . . .	9300
1755. Just before the expulsion	. . . . .	8200
1756. After the expulsion, estimated at	. . . . .	1200

so that in all over 6000 souls were deported to different destinations.

The history of Acadia is henceforth very simple. The Micmacs continued their depredations and murders until the complete triumph of the English arms left them no support. A peace was concluded in 1761, and proved to be final. Soon after, settlers began to come in to take up the vacated land, and the successful revolt of the southern colonies sent a large number of expatriated loyalists into the province, who settled chiefly at Guysborough, Windsor, Annapolis, and Shelburne. The civil government went through the usual stages of colonial evolution, until at last the province attained the status of a self-governing colony. Cape Breton in 1784 was erected into a separate government, and so remained until 1820, when it was re-united to Nova Scotia. The little town of Halifax, on account of its unrivalled harbour, became the centre of operations of the Royal Navy in the western Atlantic, and grew rapidly under the stimulus of the war expenditure during the great wars of the American and French Revolutions; but the romance died out of Acadian history, and its annals record commercial and industrial events until in 1867 the province entered the confederation of the Dominion of Canada.

The province of New Brunswick at the time of the peace of 1763 was an absolute wilderness. Although it was, in reality, included in the cession of Acadia at Utrecht, the French clung to it to the last, though they never colonised it in any effective way. Nicholas Denys, under his grant of 1653 (confirmed later), had establishments at Miscou, Miramichi, and Richibucto. The French had also a fort at Nashwaak, opposite the present Fredericton, and another at Jemseg at the outlet of Grand Lake. They had a fort, also, at St. John, at

the mouth of the St. John river, but it was often abandoned because of incessant attacks from the English colonies. They kept control of the Indians by means of communications with Canada guarded by the two interior forts.

The fort at St. John was garrisoned by English troops for some time after the peace. The first exploration of the river was made in 1761, but the province of New Brunswick is the creation of the American Revolution. In 1783 a fleet left New York with 3000 loyalists to found at the mouth of the St. John river a new home in the wilderness. The exiles were destitute of everything, for their property had been confiscated, but they were high-spirited and intelligent, because it was not the uninstructed classes in the old colonies who sided with the king. Some of the brightest names in the old colony annals were among them, and Colonel Edward Winslow might then have experienced some of the sorrows of the Acadian exiles whom his uncle expelled from Grand Pré. They were made of sterner stuff than the poor Acadians, and with unconquerable energy they opened up the forest wilderness, and soon their vessels sailed on every sea, for the instincts of maritime adventure were strong in them. The name of the settlement, at first Parr-town, was changed to St. John. In 1784 the province of New Brunswick, with its present limits, was set off from Nova Scotia, and entered upon a course of peaceful progress. During the wars with the United States and France these provinces were not the theatre of conflict. An occasional privateer was the only warlike excitement, and they understood privateering as well as any other people, and made more than they lost by it. During the war of 1812-14 an expedition from Halifax seized the coast of Maine and held it until the peace. The original en-

dowment of Dalhousie College at Halifax was a sum of £9250, collected as customs duties at the port of Machias while the British troops were in possession of Maine. After the peace, as in the case of the other provinces, the civil government gradually developed, until New Brunswick became a self-governing colony. In 1867 it became one of the confederate provinces of the Dominion.

Prince Edward Island was known as Isle Saint Jean from the time it first appeared upon the map. There were so many places of that name that confusion arose, and in 1799 it was called Prince Edward Island in honour of the father of Her present Gracious Majesty, who was then commanding the troops in Nova Scotia. The island contained very little of the marsh land so dear to the Acadians and few had settled there; for it was covered with forest and the Acadians did not like the labour of clearing land. In 1749 the population was estimated at 1000; but, for a while, the ready market at Louisbourg for all kinds of farm produce induced settlers from Nova Scotia, and in 1755 the number was rated at 3000. The population increased rapidly in consequence of the expulsion of the Acadians, and in 1758 it had increased to 6500. When the English took possession they found 4100 souls on the island. Many of them left for the mainland and some were deported, so that by the year 1771 the French population had decreased to about 1270.

In 1767 the whole island was granted in large holdings to a limited number of persons, and a mischievous system of absentee proprietorship was established which led in after years to incessant trouble between the tenants and landlords. The government was separated from Nova Scotia in 1769, and remained separate until the year 1873 when the province entered the confederation.

The land question was settled by the proprietors selling out under a valuation by a commission to the government, which then resold to the tenants on favourable terms.

NOTE TO CHAPTER IV

AIKINS, T. B.

Selections from the Public Documents of the Province of Nova Scotia. Halifax: Charles Annand, 1869.

CASGRAIN, ABBÉ.

Les Acadiens après leur Dispersion. Trans. Roy. Soc. Canada, vol. v. 1887.

Eclaircissements sur la Question Acadienne. Trans. Roy. Soc. Canada, vol. vi. 1888.

DAWSON, SIR J. WM., F.R.S., etc.

Acadian Geology. The geological structure, organic remains and mineral resources of Nova Scotia, New Brunswick, and Prince Edward Island, etc., etc. 2nd ed. 8vo. London: Macmillan, 1868.

DAWSON, S. E.

The Voyages of the Cabots in 1497 and 1498. Trans. Roy. Soc. Canada, vol. xii. 1894.

DAWSON, S. E.

The Discovery of America by John Cabot in 1497. Trans. Roy. Soc. Canada, new series, vol. i. 1896.

HANNAY, JAMES.

History of Acadia. 8vo. St. John, 1879.

PARKMAN, FRANCIS.

The story of the expulsion of the Acadians is given in *Montcalm and Wolfe*, vol. i. chap. viii.

PATTERSON, REV. DR.

The Portuguese on the North-East Coast of America. Trans. Roy. Soc. Canada, vol. viii. 1890.

PATTERSON, REV. DR.

Last Years of Charles de Biencourt. Trans. Roy. Soc. Canada, 1896.

PHILLIPS, HENRY.

On a supposed Runic Inscription at Yarmouth, Nova Scotia. Proc. Am. Philosophical Society, May 2, 1884.

RAFN, C. C. (ed.)

Antiquitates Americanae, sive Scriptores Septentrionales Rerum Ante-Columbianarum in America. Hafniae, 1837.

RICHARD, EDOUARD.

Acadia: Missing Links of a Lost Chapter in American History, by an Acadian. 2 vols. 8vo. Montreal: John Lovell and Son, 1895.

WILSON, SIR DANIEL.

Vinland of the Northmen. Trans. Roy. Soc. Canada, 1890.

This paper contains a facsimile of the inscription on the Yarmouth stone, but it is upside down and reversed. The illustration in chap. iv. p. 108, is from a photograph specially taken at the instance of T. B. Flint, Esq., M.P. for Yarmouth. The stone is referred to in a paper by the Rev. Dr. Campbell in the Trans. Roy. Soc. Canada for 1896, section 2.

CHAPTER V

THE MARITIME PROVINCES

General View

NOVA SCOTIA, New Brunswick, and Prince Edward Island form a group of provinces on the eastern flank of the Dominion which have many common characteristics differentiating them from the provinces of old Canada. They are sometimes called collectively Acadia—a euphonious word derived from the old French name L'Acadie, which itself is simply the Micmac *cadie*, used in composition to signify a place where anything expressed by the other word in the compound is found in abundance. Such a word would naturally often occur in the limited vocabulary of the natives in their early communications with white men. The French took it up and applied it to the whole maritime region. The Malicetes, a kindred tribe to the Micmacs, pronounced the same word *quoddy*, and it occurs in that form frequently in New Brunswick and eastern Maine; as Passamaquoddy Bay and Quoddy Head. During the French domination these provinces by the sea were administered by officials, who, although in rank subordinate to the governors of Canada, corresponded also directly with the ministers of the king at Paris. When, by the treaty of Utrecht in 1713, Acadia was ceded to the





Longitude West 68° of Greenwich

SCALE, 1:3228320, 62 ENGLISH MILES TO 1 INCH
20 40 60 80 100

London: Edward Stanford, 20 & 27 Cockspur St. Charing Cross SW.

Stanford's Geog. Estab^d London.

English Crown a contention immediately arose as to its true boundaries—the French seeking to narrow them to one-half of the peninsula of Nova Scotia, and the English to extend them to the utmost limit of the wording of the treaty. The English used the name Nova Scotia as the equivalent of Acadia and included the present New Brunswick within its limits. The boundaries of Sir William Alexander's patent of 1625 extended to Gaspé; but, since the setting off of New Brunswick, the name of Nova Scotia has been restricted to the present province of that name. The English claimed the country by right of the discovery of the Cabots in 1497 and 1498, the French by right of the voyage of Verrazano. If such voyages as these could give a title, under the rudimentary international law of that period, the Cabot voyages were clearly the first, but the French title was by far the stronger, because they made the first actual settlements. After a struggle of one hundred and fifty years of varying fortunes the question was decided by the sword.

The maritime provinces on the Atlantic correspond in many ways with the province of British Columbia on the Pacific. The Dominion of Canada widens towards the north; the coast-lines and mountain ridges in the western province all trend south-east and north-west, and, in the eastern province, they trend south-west and north-east, in each case following the basic plan of each respective side of the continent. The peninsula of Nova Scotia, 268 miles long and connected midway with the rest of Acadia, corresponds to the island of Vancouver, 285 miles long and connected, within only half a mile of open channel, by the dense archipelago half way along its coast, with the rest of British Columbia. As the mountains of Vancouver Island are outliers of the western Cordilleras, so the highlands of Nova Scotia

and its appendage, Cape Breton, are outliers of the Appalachian system of the east. There is a singular parallelism between the provinces on the two great oceans which might be set forth at great length; but no doubt this will suggest itself in the study of their productions and of the pursuits of their inhabitants.

The geological structure of the maritime provinces is different from that of the adjoining province of Quebec. The Laurentian system has very small space in the geology of Acadia, and the Carboniferous system has no place in the geology of old Canada. The centre of New Brunswick is a great triangular basin of horizontal Carboniferous rocks, faced on the Atlantic seaboard to the south by a rampart of primordial rock, and flanked by the Silurian of the north-western corner of the province and of the adjoining province of Quebec. The northern limit of the Carboniferous system touches the Gulf of St. Lawrence at Miscou Head, and it sweeps along the shore of the gulf, extends in a broad band along all the inner coast of Nova Scotia and into Cape Breton, and comes out near Sydney upon the shore of the Atlantic where the waves wash the coal seams on the sea-shore. The Carboniferous formation underlies the New Red Sandstone of Prince Edward Island; it is recognised in the rocks of the Magdalen islands, and comes to the surface again at the south-western point of Newfoundland where a seam of coal three feet thick crops out near the shore.

The people of Nova Scotia and New Brunswick are seafaring by instinct, and turn to the ocean with the hereditary impulses of many generations of sailors. The adoption of iron has centred the shipbuilding industry in the United Kingdom, but vessels from Halifax, Yarmouth, and St. John will still be met with in every seaport in the world; for the people of these provinces have an

innate capacity for managing such property, and are able to sail a ship at a profit where the merchants of other nations are unable to meet the competition of the iron steamships.

The people of the maritime provinces are alike in their component nationalities. In all three provinces ninety-four per cent are Canadian-born. The proportion of Acadian French in each has been given in a table in Chapter III. The inhabitants of the eastern part of Nova Scotia, especially in the counties of Antigonish, Pictou, and the island of Cape Breton, are of Highland Scotch race, and Gaelic as well as English is commonly spoken there. Nearly all New Brunswick and many parts of Nova Scotia were settled by loyalist exiles from the United States at the close of the Revolution. Of the six per cent not born in Canada not more than one per cent were born outside of the British Empire.

Climate

The climate of the Acadian provinces is more equable than that of the interior provinces of the Dominion, and, from the large extent of their sea-board, it is not so dry. The latitude of Halifax is nearly the same as that of Bordeaux, but, as explained in a previous chapter, the Arctic current hugs the coast of America, and the warm waters of the Gulf Stream are pushed out to a distance of one hundred miles from the coast. In questions of climate one year is as good as another for a datum, and the last completely tabulated year to hand is 1889. Taking that year, then, the main facts are contained in the following tables of the temperature and rainfall at the chief cities of the three Acadian provinces:—

TEMPERATURE IN DEGREES—FAHRENHEIT

	Halifax.	St. John.	Charlottetown.
Mean annual temperature .	45·81	42·66	43·64
Highest temperature during year	83·80	86·70	80·80
Lowest ,, ,,	- 8·00	- 12·00	- 14·00

MEAN TEMPERATURE BY SEASONS OF THREE MONTHS

	Spring.	Summer.	Autumn.	Winter.
Halifax, Nova Scotia . . .	51·70	62·87	39·60	29·07
St. John, New Brunswick . .	49·47	58·63	36·33	25·90
Charlottetown, Prince Edward Island	51·20	62·83	36·43	24·10

Taking the month of January alone and comparing the temperatures with well-known places in Europe, Halifax and Warsaw, in Poland, have the same mean temperature of 28·9, and taking the month of July alone, Halifax and Hamburg have the same mean temperature of 63·9.

The Atlantic ports of Nova Scotia and New Brunswick do not freeze in winter. Halifax, St. John, Yarmouth, and Louisbourg are open all the year round. Sydney is closed not so much by freezing as by the drift ice setting against the coast, while Louisbourg is sheltered from drift ice by the conformation of the coast-line. The tremendous tides of the Bay of Fundy prevent the formation of ice in the harbours of St. John and St. Andrews. The ports in the Gulf of St. Lawrence are closed in winter, and the climate on that side of Acadia is a little more severe than upon the ocean coast. The central parts of New Brunswick have a continental climate like that of Quebec.

Tables of temperature are insufficient to give an idea of climate—humidity must be taken into account. The following table gives the annual rainfall and the annual

total precipitation—snow being reduced into terms of rain :—

	Annual Rainfall in Inches.	Annual Total Precipitation.
Halifax . . .	45·34	48·58
St. John . . .	31·75	37·75
Charlottetown . .	26·71	32·45

The number of days on which rain fell at any time during the twenty-four hours, was, in Halifax, 159 ; in St. John, 119 ; in Charlottetown, 151. Halifax and Yarmouth have a greater rainfall than any other points on the Atlantic coast of Canada, and it is about the same as that of New Westminster on the Pacific and of Penzance on the coast of Cornwall.

In comparing these figures it must be remembered that the interior parts of these provinces have a much drier climate. Thus the rainfall at Digby, Nova Scotia, is only 25 inches, not much more than one-half that of Halifax, and at Bathurst in New Brunswick it is only 20·89 inches. For these reasons the continental climate of the inland provinces of Canada is considered by Canadians preferable in winter to the climate on any part of the North Atlantic coast. Prince Edward Island is low and is also nearly all coast-line, and therefore the climate is everywhere the same as at Charlottetown. Perhaps the best indication of climate is the fact that, in the western parts of Nova Scotia and in the interior of New Brunswick as in Prince Edward Island, maize may be grown as a crop. The Atlantic coast is unsuited to its culture. The greatest drawback to the whole north-east coast of America is the fog generated by the Gulf Stream, which often in summer sweeps in from the sea along the Atlantic coast and the shores of the Bay of Fundy. It never extends inland more than a few miles from the shore, and Prince Edward Island is

largely exempt, but it is a frequent source of danger along the exterior coast.

Forests

The forest trees are practically the same in all the Acadian provinces. Along the coast of the Atlantic Ocean and the Bay of Fundy the sea air and frequent fogs favour the growth of birch, spruces, and firs, but on the higher and richer soils the growth is maple, beech, ash and birch, as well as spruce and pine. The nature of the forest growth is determined by the drainage and richness of the land, the hardwood trees preferring a drier soil than the spruces. Along the rivers are found elms and red maples. In Prince Edward Island the hardwood trees grow nearer to the sea level than on the mainland, indicating a drier climate and warmer soil. The forest of the Acadian provinces consists according to lists prepared by Professor Macoun of the following species :—

Sugar Maple	<i>Acer saccharinum.</i>
Red Maple	<i>Acer rubrum.</i>
Striped Maple	<i>Acer Pennsylvanicum.</i>
Black Cherry	<i>Prunus serotina.</i>
Bird Cherry	<i>Prunus Pennsylvanica.</i>
Black Ash	<i>Fraxinus sambucifolia.</i>
White Ash	<i>Fraxinus Americana.</i>
Elm	<i>Ulmus Americana.</i>
White Birch	<i>Betula alba.</i>
Canoe Birch	<i>Betula papyrifolia.</i>
Yellow Birch	<i>Betula lutea.</i>
Red Oak	<i>Quercus rubra.</i>
Beech	<i>Fagus ferruginea.</i>
Aspen Poplar	<i>Populus tremuloides.</i>
Balsam Poplar	<i>Populus balsamifera.</i>
White Pine	<i>Pinus strobus.</i>
Red Pine	<i>Pinus resinosa.</i>
White Spruce	<i>Picea alba.</i>

Black Spruce	<i>Picea nigra.</i>
Red Spruce	<i>Picea rubra.</i>
Balsam Fir	<i>Abies balsamea.</i>
Hemlock	<i>Tsuga Canadensis.</i>
Tamarack	<i>Larix Americana.</i>
White Cedar	<i>Thuja occidentalis.</i>

The following trees, in addition to the preceding, occur in Nova Scotia and New Brunswick:—

Red Ash	<i>Fraxinus pubescens.</i>
Cherry Birch	<i>Betula lenta.</i>
Iron Wood	<i>Ostrya Virginica.</i>
Black Willow	<i>Salix nigra.</i>
Scrub Pine	<i>Pinus Banksiana.</i>

The following additional species are found in the interior of New Brunswick:—

Basswood	<i>Tilia Americana.</i>
Butternut	<i>Juglans cinerea.</i>
Mossy-cup Oak	<i>Quercus macrocarpa.</i>

These are the indigenous forest trees and are the best indication of soil and climate. "Everything will grow in Acadia that grows in France," said the old French writers, "except the olive."

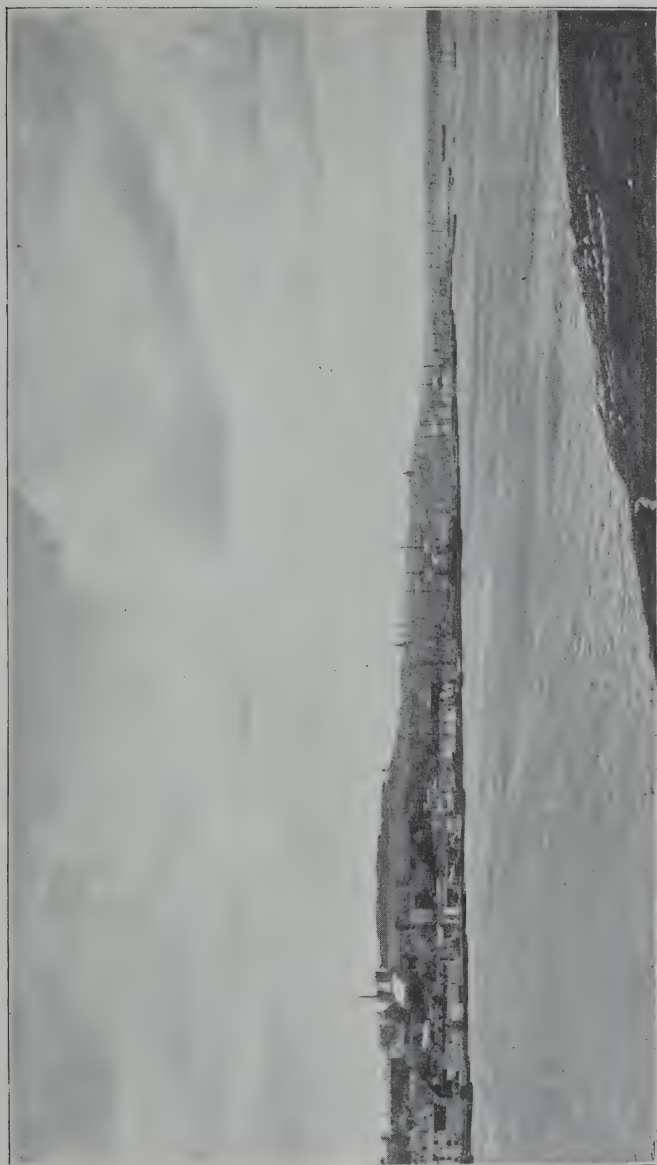
CHAPTER VI

NOVA SCOTIA

THIS province consists of the peninsula of Nova Scotia proper and the island of Cape Breton. The peninsula is 268 miles long and varies from 60 to 100 miles in width; the island is 108 miles long with a very irregular width, and is hollowed out in the centre by a remarkable arm of the sea—the Bras d'Or. The total area of the province is 20,600 square miles. It lies between the parallels of $43^{\circ} 30'$ and 47° north latitude, and the meridians of $59^{\circ} 40'$ and $66^{\circ} 20'$ west longitude, and is connected with New Brunswick by a low isthmus only $11\frac{1}{2}$ miles wide at its narrowest point. It faces on the Atlantic Ocean. On one side of the isthmus in rear is the Gulf of St. Lawrence, and on the other is the Bay of Fundy.

The Atlantic Coast

South of the Grand Banks of Newfoundland, a broad and deep ocean channel, with soundings averaging 200 fathoms, leads through Cabot Strait and the centre of the gulf far up into the river St. Lawrence. South of this channel a series of banks extend off the whole coast of Nova Scotia between the inner edge of the Gulf Stream and the land. They are known as the Banquereau,



HALIFAX, NOVA SCOTIA.

Misaine, Canso, Sambro, La Have, Roseway, and Brown Banks and the Middle Grounds. There are 20 to 40 fathoms on these ocean plateaus, and narrow gullies of deeper water separate them from each other; but their edges on the landward side are not so clearly defined. Midway in their length, but on the outer edge of these banks, is Sable Island, lying south-east of Cape Canso at a distance of about 100 miles. This island of evil omen is a bank of white shifting sand, without soil or trees, rising in one place 60 or 70 feet high, and consisting of a series of low sand dunes usually not over 20 feet high and not easily distinguished in smooth weather from the deck of a passing ship. The island itself is about 18 miles long by a little over a mile wide, and is a double ridge containing a long shallow salt water lake. Long bars of sand extend from the island at each end, and sandy ridges, with only a few feet of water, lie off the shores, so that, in heavy weather, the whole sweep of the Atlantic surge curls up in a continuous line of tremendous breakers fifty miles in length. The island was known by the earliest sailors, and the Portuguese left cattle upon it which ran wild and multiplied; for a coarse grass grows there and there are fresh water ponds. In 1598 the Marquis de la Roche landed 50 or 60 convicts on the island while he sailed westwards to explore Nova Scotia. A great storm drove his ship back to France, and it was five years before relief was sent to these poor wretches. Only 11 had survived; for murderous quarrels, as well as exposure, had thinned their numbers. They had made shelters out of the timbers of wrecked vessels, and had provided food and clothing from the wild cattle and seals which were plentiful on the island. In the gloomy annals of this "ocean graveyard" novelists have a rich mine as yet untouched. The Dominion

Government has erected two powerful lights, and maintains upon it five relief stations with lifeboats and rocket apparatus and every other life-saving appliance. The stations are connected by telephone, and a permanent staff of 18 men reside on the island with their families—about 50 souls in all.

The coast of Nova Scotia is low, but rugged and rocky, and studded with innumerable rocky islets. Mount Aspatagoen, a precipitous cliff on the headland between St. Margaret's and Mahone Bays, is 438 feet high, and the promontory of Cape La Hève is 107 feet high. They are the most conspicuous points on the coast, and the first is usually the first land seen by sailors. The western shores are wooded to the water's edge, but on the eastern coast there is only a scanty growth of birch and spruce.

The Atlantic coast differs from the inner coast by being deeply indented with numerous excellent harbours. Commencing from the east, Canso harbour is a deep and safe haven—a favourite one in the time of Champlain and Lescarbot, and now used as the terminus of ocean cables. The old sailors used frequently to make Canso their rendezvous, and call there for water in going to and from Europe; and it was the central point for the best fishing on the coast, being always thronged in the fishing season. Following westwards are Country harbour, Lescome harbour, Sheet harbour, Ship harbour, and Jedore harbour, all safe shelters for large vessels. Then follows Halifax harbour, one of the finest havens in the world, deep, commodious, and easy of access. It is fourteen miles long, with nowhere less than six fathoms of water. Beyond the narrows, Bedford basin opens out in an area of ten square miles of excellent anchorage, with water of 8 to 36 fathoms close to the shores. Westward are the harbours of St. Margaret's Bay, Mahone Bay, and

Lunenburg. La Hève, Liverpool (the Port Rossignol of Champlain) and Port Mouton are available for small vessels only; but the harbour of Shelburne is excellent, and westward of it are the harbours of Pubnico and Yarmouth. These are only a few out of very many, for the coast is deeply indented and bold.

While the Atlantic coast of the province is protected by a broad belt of hard Cambrian rock broken by eruptions of granite, the western, or Bay of Fundy, shore is protected by a long and narrow rim of trap rock which caps and covers the red sandstone cliffs from abrasion. This guardian ridge rises several hundred feet, and, save at one or two places where it is broken through, there are no harbours throughout its length. St. Mary's Bay is formed by a long projection of this wall of trap. The bay is 30 miles long with deep water. The wall is broken at Grand Passage, forming Brier island. Long island is formed by Petite Passage, and Digby neck closes in the rest of the bay. Annapolis, or Digby Gut, is a remarkable break in the barrier wall, opening into Annapolis basin.

Annapolis basin is an arm of the sea of very great beauty, rendered historic by being the scene of the settlement of de Monts, Champlain, Poutrincourt and Lescarbot. It is five miles wide, bordered by highlands on either side, and it narrows towards the end, as the North mountain and the South mountain ridges draw together. There the valley is about a mile wide and the Annapolis river falls in—a tidal river, up which steamers go as far as Bridgetown, returning by the same tide. The entrance from the Bay of Fundy is barely half a mile wide. It is two miles long, and the basaltic trap rises sheer on either side to heights of 500 to 700 feet. The water is deep and the tides rush through very swiftly.

Farther up the Bay of Fundy the Basin of Minas opens up, marked on its southern shore by capes Split and Blomidon, two grand headlands formed by the abrupt termination of the North and South mountains upon the basin. This beautiful sheet of water extends 60 miles into the land, with an extreme breadth of 20 miles. As it gradually narrows, it is called Cobequid Bay. All along its northern shore runs the range of the Cobequid mountains, clothed to their summits with beech and maple, and, on the southern shore, are the rich dyked lands of Grand Pré, made classic by Longfellow's poem of Evangeline. There dwelt the gentle maiden, the creation of a poet's dream, and her people, faithful to France through many sorrows. Near there flows in the Avon, a tidal river like its prototype, near Bristol, and the tides rise here 38 feet, sweeping away into the country at their flood, and exposing extensive tracts of unsightly smooth red mud at their ebb.

The Cobequid mountains terminate on the west in the bold headlands of Cape d'Or and Cape Chignecto. Cape d'Or is surmounted by trap, and derives its name from masses of native copper found upon it. This region is well known to mineralogists for its rare minerals. Both capes are precipitous, and the whole region is one of surpassing beauty and interest. Even the imagination of the Micmac Indians has been impressed by the nobility of the prospect, and has placed on these heights the abode of Glooscap, the Algonquin Hiawatha. The majestic dark red mass of Cape Blomidon was a fit abode for a demi-god sent by the Great Spirit to teach the stiff-necked Micmacs. Glooscap is gone, and the melancholy and lonely call of the loons vainly beseech his return, and the Micmacs are nearly all gone as well. They were good Indians according to their lights. They were the



River, Photo.

GRAND PRÉ, NOVA SCOTIA.

first converted to Christianity, and they scalped more Englishmen than any other tribe on the continent. They had a mythology of their own, and their legends are associated with all the more remarkable localities in Acadia.

From Cape Chignecto the Bay of Fundy extends for fifty miles further; at first as Chignecto channel which forks into two bays—Chepody Bay and Cumberland Basin. The latter washes the coast of Nova Scotia, the former is in New Brunswick. The rocks are softer and the coast is not so bold. On Chignecto channel, at South Joggins, are the celebrated sections of the coal-measures, and the rushing tides of the Bay keep on making new exposures full of instruction. At the head of Cumberland Basin are rich and extensive marsh meadows, and the little river Missiguash falls in—the boundary between Nova Scotia and New Brunswick, famous in the border wars which led to the expulsion of the Acadians. The connecting isthmus is narrowest here, and this point is the termination of the half finished Chignecto Marine railway, projected in order to haul ships across to the Strait of Northumberland, as the prodigious tides of the Bay of Fundy prevent a canal being made.

The northern coast of Nova Scotia on Northumberland Strait consists of a low shore behind which are seen in the distance the highlands in the rear of Pictou and Antigonish counties connecting the Cobequid mountains with the mountains in Cape Breton. The whole stretch of country is Carboniferous. The coast is indented by a number of good harbours, as Pugwash harbour and Wallace harbour; but the finest harbour in the whole north coast of the province is that of Pictou. Here the largest vessels resort to ship coal from the adjacent mines. The harbour forks out into three arms, west, middle and east,

and a river falls in at the head of each. The valleys surrounding are fertile and with the highlands in the distance make a scene of much beauty.

The eastern end of the peninsula is characterised by two large bays connected by the Strait of Canso. Cape George, a bold and precipitous headland 600 feet high, marks the western point of a broad bay, St. George's Bay, opening on the Gulf of St. Lawrence. Antigonish harbour running in from the bay is extensive but not deep. At the eastern end of the strait, and opening on the Atlantic, is Chedabucto Bay, $17\frac{1}{2}$ miles wide and 26 miles deep. Isle Madame is at the northern entrance, and upon it is the town of Arichat with a capacious and secure harbour. The island is inhabited chiefly by Acadian French, and is a very important centre for fishing vessels. The town of Guysborough is at the head of Chedabucto Bay, and the harbour and town of Canso is at its southern extremity.

These two bays are connected by a very remarkable passage, the Gut, or Strait of Canso. This is a deep lane of water, available by the largest ships, between the peninsula of Nova Scotia and the island of Cape Breton, $14\frac{1}{2}$ miles long and three-quarters of a mile wide at its narrowest part. It is much frequented by ships and, narrow though it is, the depth of water is never less than 15 fathoms. Both shores are bold. Cape Porcupine is a precipitous headland on the Nova Scotia side, 640 feet high, and on the Cape Breton side are the mountains which traverse that island. The headlands interlock so as to conceal the through passage. The scenery is exceedingly beautiful—the wooded shores, the green clearings, the white villages, the deep water, the passing ships, and the fringe of mountains present an unusually attractive scene. For a long time after the discovery of

America this passage was unknown to the cartographers and they did not separate on their maps the island from the peninsula. These seas were the best fishing-grounds in the whole region. Privateers and pirates when pursued sought refuge in their numerous shelters, and a harbour half way through the strait is still called Pirate's



STRAIT OF CANSO, N.S.

harbour. The French name was the *Passage de Fronsac* from Denys, Sieur de Fronsac, who had his chief establishment at St. Peter's, where a canal, less than half a mile long, now leads to the Bras d'Or and the interior of the island. It is more euphonious than the present name, and Denys was one of the best and most capable men who ever lived in Nova Scotia. His name should be commemorated on the coast where he spent his active and useful life.

Geology

If a line be drawn lengthwise through the centre of the peninsula, from Digby Gut on the south-west to Cape Canso on the north-east, it will very nearly mark off on its outer or Atlantic side the Cambrian rocks and, on its inner side, later formations of which the Carboniferous is the chief. These may, for convenience, be called the outer and inner geological areas of the peninsula. In this general statement, however, an important modification must be made—a broad band of intrusive granite extends round in an arch from near Cape Sable to Chebucto head near Halifax and touches with its apex the Annapolis valley near Bridgetown. Detached areas of granite also occur in the eastern extension of the Cambrian area and a small outcrop appears at Cape Canso. The outer or Cambrian area presents to the surges of the Atlantic a low barrier of hard rocks, mostly slates, sandstones, and quartzites. These contain veins of quartz carrying gold, and after making deductions for the granite outcrops there remains a total area of about 3000 square miles of Cambrian in which these gold-bearing veins may be, or have been, found. This outer area, while it contains occasional valleys of good farm land is not agricultural to any considerable extent.

The inner geological area of the peninsula is very different and, while it is in the main Carboniferous, there are some important deductions to be made. Out of the Carboniferous rocks rises the range of the Cobequid mountains, consisting of slates and quartzites and intrusive rocks considered to be Siluro-Cambrian and extending through the hilly country of Pictou and Antigonish to the Strait of Canso. There is also a narrow band of Upper Silurian and of Devonian extending from

the head of the basin of Minas eastward to the head of Chedabucto Bay and intervening between the Cambrian on the Atlantic coast and the Carboniferous of the inner waters. Along the northern shore of the Basin of Minas is a narrow strip of Triassic red sandstone, and this formation extends also in a narrow band down the valley of the Annapolis river and along the shore of the Bay of Fundy. The valley is narrow, and while, on the inner side, it is bounded by a range of hills called the South mountain, it is separated from the Bay of Fundy on the other side by a range known as the North mountain, and the red sandstone in this last is capped throughout its whole length, from Cape Blomidon to the extreme end of the peninsula, by an outflow of trap rock. The coast of Nova Scotia therefore presents on that side a very bold outline of precipitous trap rocks forming a rampart, sometimes several hundred feet high, of columnar basaltic cliffs culminating at its eastern end on the Basin of Minas in the grand promontory of Cape Blomidon.

The Carboniferous formation extends from the high land of Cape George westwards along the whole coast of the peninsula on the Gulf of St. Lawrence and across the country to Chignecto Bay and the Basin of Minas, occupying Cumberland county and the greater part of Pictou, Colchester, and King's counties. The thickness of this formation is estimated by Sir William Dawson at over 16,000 feet. At the Joggins on the shore of Chignecto Channel is a unique natural exposure of a section of the middle and upper divisions of the whole series, giving an actual measurement of 14,570 feet. It is a classic region for geologists, and Sir Charles Lyell, who examined it in 1842 and 1845, pronounced it to be "the finest example in the world of a natural exposure in a continuous section ten miles long." Here Sir Charles counted nineteen

seams of coal from two inches to four feet thick in vertical section, and the great range of the tides revealed a horizontal section of 200 yards from the base of the cliffs. Here he saw exposed to full daylight fossil trees erect in ten distinct levels and terminating downwards in seams of coal, and Sir William Dawson, he says, has enumerated over 150 species of plants found in this extraordinary section of the coal-measures. The cliffs on the shore are from 100 to 400 feet high.

The main geological formations of Nova Scotia are continued in Cape Breton Island. The Cambrian of the Atlantic coast extends in a band occupying the south-east corner of the island as far as the cape from which the island takes its name. West and north of that is a wide area of Carboniferous rocks, and from Cape Breton head to the entrance of the Bras d'Or they crop out on the sea beach and the black bands of coal may be seen, in the cliffs, from a passing steamer. The long northern projection from the head of St. Anne's Bay to Cape North is formed of Laurentian gneiss—the only place in Nova Scotia where that formation occurs. It rises in a lofty irregular table-land, but a narrow fringe of Carboniferous rocks extends almost all round the margin upon the gulf shore.

Minerals

The chief resources of Nova Scotia, so far as worked, consist of coal, iron, gypsum, and gold. Other valuable minerals occur, but the above have been developed and utilised. Coal is extensively mined in three chief localities—Cumberland, Pictou, and Cape Breton. The coal-field of Sydney, Cape Breton, extends along the Atlantic shore for 32 miles and covers an area of over

250 square miles. Thirty-four seams occur in the section, but only a few of them have been worked. Less extensive coal-measures occur also on the west coast, at Cheticamp, and Mabou and at Port Hood and on the south coast, in Richmond county. These have been tested, and small quantities of coal have been taken out, but the only important workings have been near Sydney.

The Pictou coal-field (thirty-five square miles in extent) is remarkable for the great thickness of its seams. In one section the main seam is 34 ft. 7 ins., and what is known as the Deep Seam is 22 ft. 11 in. thick. Other seams occur 5 ft. 7 in., 3 ft. 6 in., 3 ft. 3 in., 12 ft., 5 ft., 11 ft., and 10 ft. thick, respectively—in all 107 ft. 10 in. of coal. The Cumberland coal-field has an area of 430 square miles, and is worked chiefly at Springhill, where eight seams occur, with an aggregate thickness of 52 ft. 7 in. Mines have been opened at several other places—at river Hébert, at Maccan, and at the Joggins. All the coal of Nova Scotia is bituminous, and the area of the known productive coal-fields of the province is over 700 square miles. Coal has been found in many other places, but there is no profit in opening up new mines as those now in full operation can supply the present demand.

Gold is mined in many places in the outer Cambrian area throughout the whole length of the province on its Atlantic side, and also in several localities in Cape Breton. Gold has been found in thirty-five localities, and mines are worked in Queen's county and in many places from Halifax to Canso. The total product from 1862 to 1895 was 602,268 oz., value \$11,808,486. The area of auriferous rocks is very wide and extends through the roughest part of the province. The forests and swamps of the interior probably cover many rich

districts. The ores are low in grade, but the quantity is very large and, by recent improvements in treatment, the gold can be extracted from ores hitherto unavailable. The mines during the past year (1896) have been extending their operations with success.

Iron

Iron ores of great value are found in a broad belt through the whole length of the province and in Cape Breton. Immense masses are found in the coal districts, and the manufacture of iron and steel is carried on by large companies in the Pictou district. There are extensive iron and steel works also near Londonderry, in the Cumberland coal-field, where specular, magnetic, and hæmatite ores occur in beds of immense extent. Some of the Nova Scotia ores are unequalled excepting by the best Swedish ores.

Gypsum

The quantity of this mineral existing in the province is incredible. Large masses showing exposures 50 feet thick are frequently seen. On the shores of the Bras d'Or it may be dropped into the holds of sea-going vessels from the masses standing out white upon the green slopes of the mountains or forming part of their precipitous sides. Gypsum has been exported from the region round the Basin of Minas from the earliest settlement of the country.

Character of the Land

The peninsula has been, in the previous pages, roughly divided into two parts almost equal in area. One half facing the Atlantic and the other facing the interior

waters and, speaking in a general way, the first half may be said to be rocky and barren, and the second for the most part arable and fertile. The Atlantic half corresponds to the region of hard Cambrian rocks and granite, the other to the region of Silurian, Devonian, Carboniferous, and Triassic. The barren band along the coast is about 21 miles wide in its whole length.

The surface on the Atlantic coast is low, and it does not rise more than 200 or 300 feet in the interior. In the central part it is traversed by broken and rocky ridges of very little elevation and interspersed with numerous lakes and streams, especially at its western end in rear of Yarmouth, Shelburne, and Liverpool. There are also many bogs and many barrens where the forest has been burned. The country is a paradise for sportsmen where moose and cariboo are plentiful, and bears are also to be found, as well as fur animals such as foxes, otters, and minks. The numberless lakes are full of trout, and the rivers at the coast abound in sea trout. Partridges, snipe, and woodcock are plentiful, and, in their season, all the waters, streams, lakes, and bays are resorts of geese, ducks, and brant. The whole country is covered with forest and, though in the alluvial land along the streams there is agricultural land, the interior is for the most part unsettled and wild.

On the side facing the inner waters of the Bay of Fundy and the Gulf of St. Lawrence it is far different. There continuous hills clothed with beech, maple, and other hard woods run in ranges in the general direction of the coast-lines. The Annapolis valley is flanked on both sides by two such ranges extending from the basin of Minas south-westwardly to the extreme end of the peninsula. These have a general elevation of 500 to 700 feet. Along the north shore of the Basin of Minas are the

Cobequid mountains which continue on along the northern half of the peninsula to Cape George and the Gut of Canso. The mountains are nowhere higher than 1200 feet, and are covered with fertile soil, or where uncleared, with dense forests of hardwood trees. At the eastern end of this region is a rich pasture country, and around the Basin of Minas and Chignecto Bay are the fertile marsh lands formed by the tides of the Bay of Fundy.

The rivers flow across the peninsula, and necessarily are small from the narrowness of the watersheds; but they are very numerous, and the tides running up from the heads of the bays into which they fall make them appear more important than their drainage area would warrant. Many of the lakes in the interior are connected by the rivers, so that it is easy to pass across the country with canoes, for the portages are short. By the Shubenacadie river and chain of lakes, the Micmac Indians in the last century used to cross from the Basin of Minas to the divide within a few miles of Halifax, and, after hiding their canoes, lurk in the woods round Halifax, Lunenburg, and Dartmouth, waiting for the scalp of any English settler who might be found off his guard, or for the scalps of his wife and children if they were alone in the house. From Liverpool and Lunenburg similar chains of lakes with short portages lead across to the Bay of Fundy. Lake Rossignol and the Great Shubenacadie Lake are the largest.

The most important of the rivers are the Shubenacadie, which rises near Halifax and empties into the basin of Minas, the Annapolis, which runs along the western edge of the peninsula, the La Hève river, and the Pictou river; but in a country of great rivers like the Dominion these cannot count for much. The province of Nova Scotia is, like its sister provinces, a land of abundant water.

The agricultural lands, as before stated, face along the inner bays. The valley of the Annapolis is celebrated for apples, and during the year ending June 30, 1895, 285,884 barrels were exported, chiefly to England and the United States. This valley, being sheltered throughout by a double range of hills, is warmer than the rest of the province. In Cumberland, Colchester, and Hants counties are the chief part of the dyked lands which never require manuring, and have produced large crops of hay for a hundred years. All the inner counties of the province are productive farming districts, and wherever the tides of the Bay of Fundy reach they have formed meadow land of great fertility. Upon such land, wherever found throughout the province, were the settlements of the French Acadians. They did not clear land with the axe, but took up these fertile meadows and extended them by dykes (called *aboteaux*) with sluices. Whenever these were opened the water of the bay entering deposited a thin dressing of red mud which renewed the fertility of the soil.

Government

The government of Nova Scotia at first extended over all Acadia. Prince Edward Island was erected into a province in 1770, and New Brunswick was set off in 1784. Cape Breton was separated in 1784, but again attached to Nova Scotia in 1820.

The constitutional history of this province passed through the process of evolution usual in British colonies. First came the royal governor, with a council nominated by the Crown. The popular legislative assembly was superadded in due course; then ensued the usual struggles between the nominated and elected bodies, until in 1847 what is called responsible government was conceded, that

is, the popular assembly obtained the dominant influence corresponding to that of the British House of Commons. The subsequent political history is not different from that of other parliamentary governments, and consists of alternate administration by two political parties. In 1867 Nova Scotia became one of the provinces of the Dominion.

It is now governed by a lieutenant-governor appointed by the Dominion Government, a legislative council of twenty members having a property qualification, appointed for life by the Crown in theory, but practically by the government of the day, and a legislative assembly of thirty-eight members, elected under a franchise narrower than that of the other English provinces, but still on a very popular basis. The executive government or administration consists of eight members, and must be able always to obtain the support of a majority in the popular chamber.

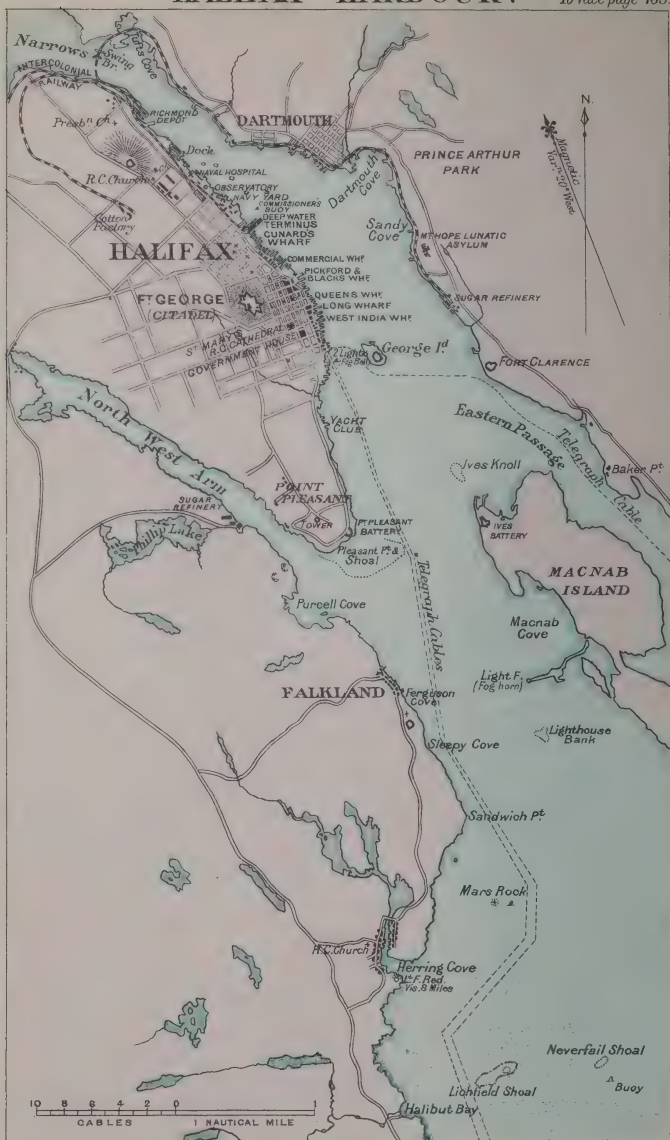
The local government is carried on by the municipal councils either of cities or of rural districts. The first may be regulated by their own special charters or fall under the general law, the second are under the general municipal law of the province. Every electoral division sending a representative to the provincial legislative assembly is a municipality for its own local objects. The municipal council is composed of councillors elected by the ratepayers who choose a head—mayor or warden.

Education

The schools of the province are undenominational and free, and the course extends from the primary schools for children of five years to the high schools and academies. The Government maintains a normal school

HALIFAX HARBOUR.

To face page 163.



Stanford's Geog. Estab. London.

London: Edward Stanford, 26 & 27, Cockspur St. Charing Cross, S.W.

for the training of teachers and schools for the deaf and dumb and blind. The executive council (or administration of the day) is the supreme governing body, and acts through the superintendent of education. It appoints a board of examiners for teachers and a staff of school inspectors. The province is divided into school districts, for each of which a board of school commissioners is appointed by Government. The districts are subdivided by the commissioners into school sections, and these are administered by a board of three trustees elected by the ratepayers.

The schools are supported by legislative grants supplemented by statutory municipal taxation. When any unusual amount is required, it must be voted by a meeting of the ratepayers of the districts concerned. From the high schools those who desire to pursue their studies further may avail themselves of the University of Dalhousie College at Halifax, which is undenominational; or King's College at Windsor, which is Anglican; or Acadia College at Wolfville, which is Baptist; or St. François Xavier College at Antigonish, which is Roman Catholic. The aggregate amount expended on public education in 1895 was \$811,804.

Cities

Halifax, the capital of the province, is situated upon a rising ground—a peninsula formed by Bedford basin (the continuation of the harbour) and the North-west Arm, a beautiful sheet of water (a quarter of a mile wide and navigable for large vessels), running into the land in rear. It is very strongly fortified, not only by the citadel, a first-class fortress, which rises over the city, but by forts at the entrance of the harbour which can cross their fire,

and by forts upon islands which can rake the channels of approach from sea. This is the last foothold of Imperial power on the continent saving a few engineers at Esquimalt on the Pacific. Since the Imperial troops were withdrawn from the rest of Canada a regiment has been left here, and Halifax is also the chief centre of the British naval forces in North American waters. The harbour has been noticed on a previous page.

The population of Halifax given in the census of 1891 is 38,556, and the pursuits of its people are chiefly maritime. The total tonnage registered at Halifax is 43,694 tons. The imports amounted in value to \$6,256,992 and the exports to \$5,997,284 for the year ending June 30, 1896. The trade of Halifax is largely connected with the product of the fisheries.

The number of vessels entered inwards from sea in the year ending June 30, 1896, was 975, with a total tonnage of 605,345 tons.

Halifax is the seat of the provincial government, and the old province building suggests many memories of old colony days. The Imperial Government has an extensive dockyard and naval arsenal, and on the hill overlooking it is the official residence in summer of the admiral commanding on the North American station. Dalhousie College, a non-denominational university with about 500 students, is at Halifax. It was established in 1820, during the administration of the Earl of Dalhousie, and is the chief educational institution of the province.

Yarmouth is the second city of Nova Scotia. It has a population of 6089 of the most enterprising people in the whole Dominion. The tonnage registered in this small place amounts to 52,731 tons, and the management of shipping is a peculiar gift of the people of this city. The harbour of Yarmouth is not equal to many others in

Nova Scotia, and there is no back country to support it. The lakes in rear are beautiful, and the region is a sportsman's wilderness, not a rich farming country, and yet Yarmouth is more prosperous than any other city in the east. In the ten years, 1881-1891, the ratio of increase in population was 74·7 per cent.

Truro, at the head of Cobequid Bay, is the next important place in the province. It is in the centre of a rich farming district and the provincial normal school is there. It is also the centre of some important manufacturing industries. It is an exceedingly pretty town. The population is 5102 and increased 47 per cent in the last decade. Lunenburg, with a population of 4044, increased 131 per cent in the same period. It is a maritime town and depends upon the fisheries, sending out many vessels to follow the cod fishery on the banks. Amherst at the head of Chignecto Bay is in a rich agricultural district, the fen lands of the upper Bay of Fundy, and is a centre of supply for the Cumberland mining district. Its population increased 66 per cent in the last ten years, and is now 3781. New Glasgow is the centre of the Pictou mining district. It increased 45 per cent, and the population is 3776. Pictou, the shipping port, has remained stationary, the towns closer to the mines grew at its expense. Windsor (the Pisiquid of French and Indian history) is a small town of 2838 inhabitants on the Avon, a tidal river falling into the Basin of Minas. Its people are large owners of shipping. King's College, the oldest English college in Canada, is at Windsor. It was founded in 1788 on the plan of an English college, and is under the control of the Anglican Church.

Communications

The railway communications of Nova Scotia for the most part form a portion of the Government line of the Intercolonial railway. Halifax is connected by that line with Windsor and Truro at the heads of the two great arms of the Bay of Fundy. The same line connects with Pictou and Sydney, Cape Breton, the centres of the two great coal-fields, and, in passing over the isthmus to connect with the main Canadian system, the line traverses the Cumberland mining district. There is a line of railway from Windsor down the Annapolis valley to Digby and Yarmouth, and a branch connects the valley with the Atlantic coast at Lunenburg. There is a short spur from the Springhill coal mines to their shipping port (Parrsboro') on the Basin of Minas, and another connecting the Cape Breton coal mines with Sydney and Louisbourg. The Joggins coal mines are reached by a spur from the Intercolonial railway from Maccan near Amherst.

Halifax is in communication with Europe by several lines of steamships. The Allan line is fortnightly from Norfolk and Baltimore, touching at Halifax and St. John's, Newfoundland, to Queenstown and Liverpool. The Furness line runs from Halifax direct to London, the Hansa line to Antwerp and Hamburg, the Allan line to Glasgow. There is also a line to New York and one to Boston, and lines of coasting steamers run to Canso and ports in the gulf and round the coast westwards. Steamers run regularly also to St. John's, Newfoundland, and to Sydney.

The following table gives a summary of the chief facts not already stated of the business of the province:—

Total value of imports (1895-96)	.	.	.	\$8,336,820
„ „ exports „	.	.	.	10,999,160

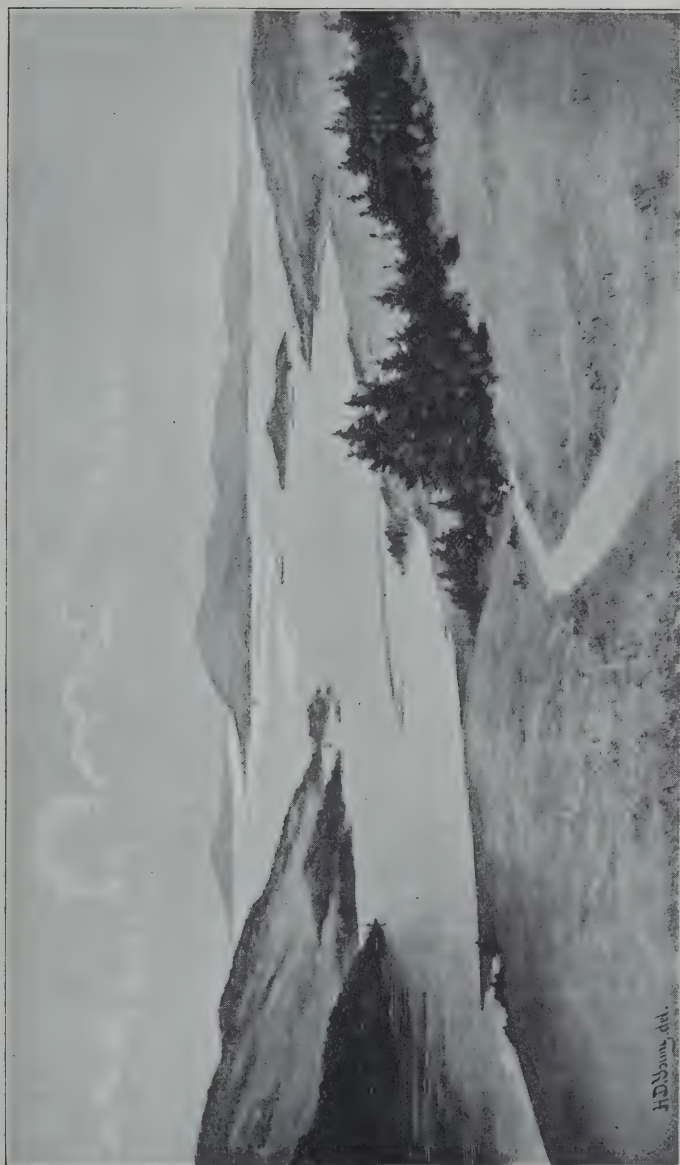
Value of produce of fisheries (1894-95)	. . .	\$6,547,387
Number of fishermen (1894)	. . .	19,571
Quantity of coal produced (tons) 1895	. . .	2,265,930
„ iron ore produced (tons) 1895	. . .	83,792
„ pig iron made (tons) 1895	. . .	52,454
Value of gold produced (value) 1895	. . .	\$406,770
Quantity of gypsum exported (tons) 1895	. . .	156,809

Cape Breton

The island of Cape Breton is unlike any other part of the Dominion. It has a beauty all its own—a beauty of woods and mountains and sea and lakes in close contrast, for the ocean passing through the narrow inlets flows into the very heart of the island, and searches out the innermost recesses of the two mountain ranges which spread out like the letter V to the north and north-east. The water is deep enough to permit vessels of the largest size to lie close inshore, and there is not sufficient range of tide to expose much beach, so the woods come down to the margin of the Bras d'Or, as this brimming loch is appropriately named. On the west is a wilderness table-land of 1100 square miles and 1200 feet high, and the highlands on the outer side are bluff on the gulf shore and on the inner descend steep down to the Bras d'Or. On the east is a lower range, where an occasional farm may be seen breaking the rounded outlines of the forest-clad hills. At the extreme southern point the Dominion Government has cut a canal, only 2400 feet long with one lock, and opened out another passage into the Atlantic, thus dividing the island into two separate parts. The distance from the northern entrance from the sea to the canal is 60 miles, and the Bras d'Or at its widest is 20 miles across. The mountains are not high enough to be gloomy, and they are covered with a mixed forest of deciduous and evergreen trees. Of a

summer's day, when the sun shines from a clear blue sky, it lights up the translucent water to the bottom, and the medusæ, or jelly-fish, float in shoals of delicate white, pink, and purple discs, expanding and contracting with regular pulsations in the warm sunlit waters. There is no stir in this golden arm of the sea. The western plateau is an unexplored wilderness, the home of the moose, the cariboo, and the bear; occasionally a vessel is seen close inshore, loading gypsum from a white cliff, or the steamer may disturb some bird sitting out on a low branch fishing and studying the clear water for a strike. The brooks and streams falling in are full of trout, and all the fish of the neighbouring coasts are found in the deeper waters. At one point, where the Little Bras d'Or passes into the Great Bras d'Or, all the lake closes in to the Grand Narrows and there it is bridged by the Intercolonial railway. Then it spreads out again in great stretches among the hills—more beautiful, says Charles Dudley Warner, than he had imagined a body of salt water could be. In the fresh early morning, when the loons begin to talk about getting up, or in the still evening when the purple of the hills begins to darken, or even in full mid-day when the leaves rustle lightly overhead and the ripples sparkle in the sunshine, the beauty of the Bras d'Or can be expressed only by the opening stanzas of Thomson's "Castle of Indolence" before the Knight of Industry broke in upon the restful paradise.

The Carboniferous rocks of Nova Scotia continue into Cape Breton island and form its centre in which, as in a basin, lie the Bras d'Or lakes. Productive coal seams crop out on the edges of the island—at the west, on the shore of the gulf along the base of the hills from Port Hood to Margaree—in the south, near Port Hawkesbury at the entrance of the strait of Canso—at the south-east,



BADDECK, ON THE BRAS D'OR, CAPE BRETON.

H.D. Young del.

along the banks of the river Denys; and, on the north-east, near Sydney, where they crop out on the sea-shore. Along the south-east coast, from the Lennox passage to Seatari island, a continuation of the Cambrian belt of Nova Scotia borders the low rocky shore. To the north the long projecting plateau extending to the northern capes consists of crystalline rocks classed as Archæan. All round this plateau the coast is bold, rising to 1392 feet at Cape Enfumé. On the whole west or inner coast of the island Port Hood is the only fair harbour, but on the Atlantic side are many excellent harbours, foremost among which is that of Sydney, one of the best in the world although blocked by ice in winter. In the sixteenth century, fishermen from all the maritime nations of Europe resorted annually to this coast, and the old names bear witness that they resorted to different harbours. Thus, St. Anne's Bay was called Port Dauphin and was a favourite rendezvous of the French, Sydney harbour was called Baye des Espagnols, and Louisbourg, Port aux Anglais. Ingonish or Niganis was, says Champlain, at one time a resort of the Portuguese. Cape Enfumé, Smoke cape or *Baia des fumos*, derives its name from a very curious appearance of smoke ascending from the shore up the face of the cliff which led the old mariners sailing past to suppose the place was inhabited.

The chief town of Cape Breton is Sydney, population 2427. North Sydney, on the opposite side of the harbour, has a population of 2522, and the population at the neighbouring mines is 2446. The harbour is very commodious, spreading out into two deep arms. It is a favourite port of the French squadron on the Newfoundland station. The site of Louisbourg is occupied only by a few fishermen and the ruins of the old fortress city. The harbour is small but is open all the year. It



SYDNEY, CAPE BRETON.

will no doubt once more become, on that account, important, for a railway has recently been completed to it from the coal mines. During the last 140 years there has been a strange desolation about this really fine harbour, once the centre of the power of France in the west. The fortress was blown up beyond all restoration after its capture, and as the land around is barren, only a few fishermen's huts mark the site of the once crowded seaport.

NOTE TO CHAPTER VI

The following books contain more detailed information :—

BOURINOT, J. G.

Historical and Descriptive Account of the Island of Cape Breton.
Trans. Roy. Soc. Canada, vol. ix. 1891.

BROWN, RICHARD.

Coal Fields of Cape Breton. 8vo. London.

BROWN, RICHARD.

History of the Island of Cape Breton. 8vo. London : Sampson
Low and Co., 1869.

GILPIN, EDWIN (Inspector of Mines).

Mines and Mineral Lands of Nova Scotia. Halifax : Robert T.
Murray, 1880.

GILPIN, EDWIN.

The Gold Fields of Nova Scotia. Newcastle-upon-Tyne, 1882.

GILPIN, E.

The Mining Development of Nova Scotia, a paper read before the
Federated Institution of Mining Engineers. London, 1894.

HALIBURTON, THOMAS C.

Historical and Statistical Account of Nova Scotia. 2 vols. 8vo.
Halifax, 1829.

HARDY, Capt.

Forest Life in Acadia. Sketches of Sport and Natural History in
the Lower Provinces of the Canadian Dominion. London :
Chapman and Hall, 1869.

MURDOCH, BEAMISH.

History of Nova Scotia, or Acadia. 3 vols. 8vo. Halifax: James Barnes, 1865.

NOVA SCOTIA GOVERNMENT.

Annual Reports of the Department of Mines.

PATTERSON, Rev. Dr.

Sable Island: its History and Phenomena. Trans. Roy. Soc. Canada, 1894.

The following are the dates of Reports of officers of the Geological Survey, arranged by localities :—

CUMBERLAND COAL FIELDS.

E. Hartley, 1869; W. McQuat, 1874; S. Barlow, 1876; R. W. Ells, 1885; H. Fletcher, 1892.

PICTOU COAL FIELDS.

Sir Wm. Logan, 1869; E. Hartley, 1869; H. Fletcher, 1891.

CAPE BRETON COAL FIELDS.

Chas. Robb, 1873-75; H. Fletcher, 1876-78, 1884, 1895.

GOLD FIELDS.

T. S. Hunt and A. Michel, 1868; Dr. Selwyn, 1871; E. R. Faribault, 1886, 1896.

EASTERN NOVA SCOTIA.

H. Fletcher and E. R. Faribault, 1886.

PICTOU AND COLCHESTER COUNTIES.

Dr. Selwyn, 1873; H. Fletcher, 1891.

SOUTH-WESTERN NOVA SCOTIA.

L. W. Bailey, 1893; R. Chalmers, 1894

These Reports are published, and may be had at the Geological and Natural History Museum at Ottawa.

CHAPTER VII

NEW BRUNSWICK

THE province of New Brunswick is almost square in shape, and three of its sides front on the three great bays of the Atlantic coast of the Dominion. On the north it is bounded by the whole length of the Bay Chaleur and by a part of the province of Quebec. From the head of the bay the line follows the Restigouche river and its tributary the Patapedia as far as lat. 48° , which parallel it follows westwards to the water-parting of the Restigouche and the waters flowing north into the river St. Lawrence by the Rimouski. At that point the western boundary commences. It follows approximately by straight lines the water-parting of the Rimouski and St. John rivers southwards to the south-east corner of the old seigneuries of Temiscouata and Madawaska. Leaving these seigneuries wholly in the province of Quebec, the line follows their southerly limit, and continues on in the same general south-west direction to a point on Lake Beau, where it touches the international boundary. From that point it follows the international boundary southwards to the mouth of the St. Croix river. The greater part of the western boundary is, therefore, formed by the state of Maine, and the rest by the province of Quebec. On the south New Brunswick is bounded by the Bay of

Fundy and by the isthmus at its head—the little river Missiguash being the line of separation from Nova Scotia for almost the whole distance across the isthmus. The eastern boundary is the Gulf of St. Lawrence.

The province extends from $63^{\circ} 55'$ to $67^{\circ} 40'$ west longitude and from $44^{\circ} 35'$ to 48° north latitude, an extreme distance of 200 miles from east to west, and 230 miles from north to south, and its area is 28,200 square miles. Two islands at the entrance of the Bay of Fundy belong to it—Campobello and Grand Manan, both very important to the fishing interests of the province. Campobello is 8 miles long by 3 in width, with very bold shores, and is covered with forests of evergreens. In 1767 it was granted to Admiral Owen, and was held by his heirs for 100 years. There are 1160 inhabitants on the island, mostly fishermen. Grand Manan is 22 miles long by 3 to 6 miles wide, and has good harbours on the east coast. The west and south coasts are perpendicular cliffs 300 to 400 feet high. The surface is level and wooded, and the inhabitants, 2700 in number, live by fishing. Both these islands are the summer resort of many wealthy people from the south, and of artists, who find abundant material for sketches in their bold cliffs and picturesque marine scenery.

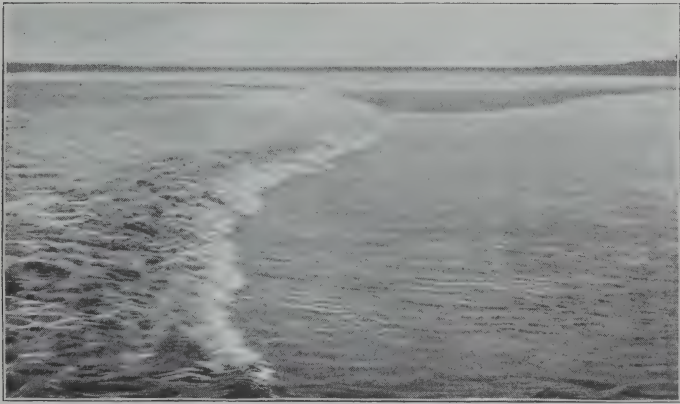
The exterior of New Brunswick on the west and south will make an unfavourable impression, for the coast on the Bay of Fundy is rocky and rugged though not high, and the country on the eastern part of Maine and the western part of New Brunswick, where the railways cross the border, is a wilderness of boulders and of rock, where the burnt forest has not found soil wherewith to renew itself. These narrow barriers of barren and rocky soil enclose a broad area of level and fertile country extending away to the eastern and northern shores.

The Bay of Fundy

This broad arm of the North Atlantic reaches eastward towards the Gulf of St. Lawrence, and separates, excepting for a low isthmus only $11\frac{1}{2}$ miles across, the peninsula of Nova Scotia from the province of New Brunswick on the main continent. It is about 180 miles in length. Opposite St. John harbour it is 45 miles wide, and continues about that width until it forks into two great bays—the Basin of Minas and Chignecto Bay, which last subdivides into Shepody Bay and Cumberland Basin, the Beaubassin of the French. De Monts, in 1604, named it La Baye Française, and so it remained upon the French maps; but the English always called it the Bay of Fundy—the corruption probably of an earlier Portuguese name, *Baya Fonda*, or “the deep bay,” for the Portuguese were the earliest cartographers of this coast.

The tides of the Bay of Fundy are noted for their height. In St. John harbour the spring tides rise 27 feet; at Sackville, 45 feet; at Fort Cumberland, 45 feet; at the mouth of Shubenacadie river in the Basin of Minas, 50 feet, rising constantly higher towards the upper reaches of the bay. The cause is apparent on the map. The tidal wave sweeps in from the ocean with a broad front, extending from Cape Sable in Nova Scotia to the Maine coast, and, as the shores of the bay draw together and the depth decreases in the upper reaches, the wave rises in height, and its current becomes swifter. At Cape Sable it runs at the rate of three miles an hour, but rapidly accelerates its speed until, in Chignecto Bay and the Basin of Minas, it rushes at the rate of six or seven miles an hour with a bore or crest up the funnel-like estuaries. The water in the upper reaches becomes heavily charged with sediment. The bore arrives suddenly,

the foremost wave curling some 4 to 6 feet high, and it covers almost instantly the broad flats at the head of the bay. The ceaseless scour has, in its lower courses, deepened the bay and swept the shores. On the New Brunswick side the rocks are hard Cambrian, and on the Nova Scotia side a wall of hard trap protects the Red Sandstone, but farther up the softer Carboniferous and Red Sandstone rocks are corroded by the swift currents. At



Marshman, Photo.

THE BORE, PETITCODIAC RIVER, MONCTON, NEW BRUNSWICK, AUG. 8, 1892.

Height, 5 feet 4 inches.

such points as Windsor, or Moncton, or Amherst, the spectator at low tide will see only a vast expanse of smooth red mud, and far away in the middle little rivulets such as the Salmon, the Avon, the Missiguash, the Petitcodiac, trickling in a thin stream of fresh water. Suddenly will arrive a rush of waters, and these little rivers have spread out to a width of two or three miles, and the water brims up in all the little brooklets and ditches. Tide after tide deposits thin layers of red mud

on the flats, and they gradually rise until only the spring tides cover them, then they are dyked and become rich hay meadows which a hundred years of cropping will not exhaust.

The Bay of Fundy, in the months of summer, is very subject to fogs; for the wind at that season frequently blows from the south, and almost any wind with south in it will bring up fog from the Gulf Stream. Otherwise there is no difficulty in navigating it. The coasts are bold; there are no shoals because of the ceaseless scour, and the tides, if they are swift, are always the same. There is excellent shelter for vessels along the New Brunswick coast, and, after the islands off Passamaquoddy Bay are passed, there are no rocks to endanger navigation. Even when the fog is thick on the main bay it does not extend inland, and the whole extent of Passamaquoddy Bay may be clear over an area of 100 square miles of deep and sheltered water. Passamaquoddy Bay contains many harbours, of which the best is that of St. Andrews. Other excellent harbours on the main Bay of Fundy west of St. John are: L'Etang, Lepreau, and Musquash harbours, besides the harbours and shelters of Grand Manan and Campobello islands. On the Nova Scotia side the openings through the barrier of trap are few and narrow, but the harbours of St. John and St. Andrews are open all the year round with easy access and simple navigation to the main Atlantic. There is no other part of the western ocean where the phenomena of the tides afford so interesting a study.

Contour of the Land

The whole southern border of the province fronting on the Bay of Fundy is protected from the scour of the tides

by a narrow belt of ancient and partly metamorphosed Cambrian and Cambro-Silurian rocks extending from Shepody Bay in a series of ridges of no great height; Shepody mountain (1050 feet) being the highest point. This belt reaches almost to the south-west corner of the province, and from that point a similar band of hard rocks, largely granite, stretches away at an angle of about 45° , across the province to Bathurst on the Bay Chaleur. Between the base line and this diagonal extends a wide fan-shaped area of level land underlain by rocks of the Carboniferous formation; beyond the diagonal to the north-west is a rolling country of Silurian age. The diagonal stretch of highlands is the water-parting, separating the waters of the Mirimichi and the Richibucto, flowing into the Gulf of St. Lawrence from the waters of the upper St. John and the Restigouche. The dividing ridge varies in height from 1000 to 1500 feet, and detached mountains rise throughout this disturbed band to heights from 1500 to 2000 feet, rendering broken and confused the country about the head waters of the Tobique, Upsalquitch and Nipisiquit. Bald Mountain, the highest point, is a mass of granite 2470 feet above the sea, and the height of Blue Mountain is 1600 feet. These ranges of hills are forested to their summits. With the exceptions stated above New Brunswick is a level plain, covered everywhere with forests, and large tracts of it are yet unexplored; a famous hunting country for moose and caribou, bear and lynx, sable, mink, and beaver. Under the operation of good game laws these wild creatures are increasing rather than diminishing in number.

New Brunswick has been well called the best watered country in the world; for it contains an unusual number of rivers terminating at their mouths in estuaries

forming good harbours. These flowing through the interior region of soft rocks have cut broad valleys; so that the country, which is really a plain only from 200 to 400 feet above the sea, seems to be a series of ridges. The valleys are called *intervalles*, and consist of low alluvial lands flooded at the spring freshets or of terraced land at different elevations above the streams. Such lands are fertile and easily worked, and when not cleared are clothed with a forest of hard wood—the elm and ash growing on the lower levels, which are fertilised by the spring floods. All the islands in the streams are alluvial land of the same quality, consisting of rich loam on a sub-soil of sand or clay. North-westwards of the diagonal range of hills the Silurian plain is 500 to 800 feet above the sea.

Hydrography

As stated above, the province is watered by numerous rivers, and these spread out into a maze of innumerable forks and branches, all of which have valleys of a similar nature more or less wide, so that the aggregate of *intervale* land is very large. Those flowing into the Gulf of St. Lawrence terminate in wide lagoons protected by sandy bars and spits; for the coast on that side is low although the water of the gulf is deep.

The chief river of New Brunswick is the St. John—a grand river draining one-half of the province and that part of Maine which was presented to the United States under the Ashburton treaty. It rises in the State of Maine, near the sources of the Penobscot and the Chaudière, and flows in a great curve of 450 miles first north, then south-east and south for about 300 miles in New Brunswick. It drains an area of 26,000 square miles, one half of which is in that province. The head waters

of the river in the State of Maine flow through a country valuable for its lumber, and although Lord Ashburton wrote that Croker's "little farm was worth the whole pine swamp," the pine of the ceded region has been of great value to our neighbours, and pines do not grow in swamps. The St. John is a lumbering river of the first importance, not only to New Brunswick but to Maine; for all the lumber cut on the upper St. John and its tributaries in that State is floated down to the sea at the city of St. John. For eighty miles of its course the river is the international boundary and does not become a wholly British stream until a little above Grand Falls. It is navigable for large river steamers for 86 miles as far as Fredericton, and smaller steamers may go up in spring and early summer 126 miles farther to Grand Falls. Above that break it is navigable for a further distance of 65 miles.

The upper stretches of the river flow through a farming country where the Madawaska river falls in, draining Lake Temiscouata—a fertile region settled by Acadians driven out from their homes in the great dispersion, who returned to find them occupied by strangers, and retreated far up into the wilderness where they found an undisturbed retreat wherein to follow their own customs in peace. At Grand Falls the river expands into a broad basin preparatory to forcing its way in a swift current through a narrow rocky channel down an incline of 6 feet to a precipice of 58 feet, over which it falls into a deep chasm 250 feet wide with walls of rock 100 to 250 feet high. Within the chasm the river makes a further fall of 58 feet in rapids and eddies and whirlpools for a distance of a mile. This is the only obstruction to navigation above St. John harbour, and the river resumes its tranquil course through a level and rich

farming country with much fertile intervale land, settled after the American Revolution by expelled loyalists. It receives many important tributaries in its upper course—the Aroostook from Maine, the Madawaska and St. Francis from Quebec, and the Tobique from near the shores of the Bay Chaleur.

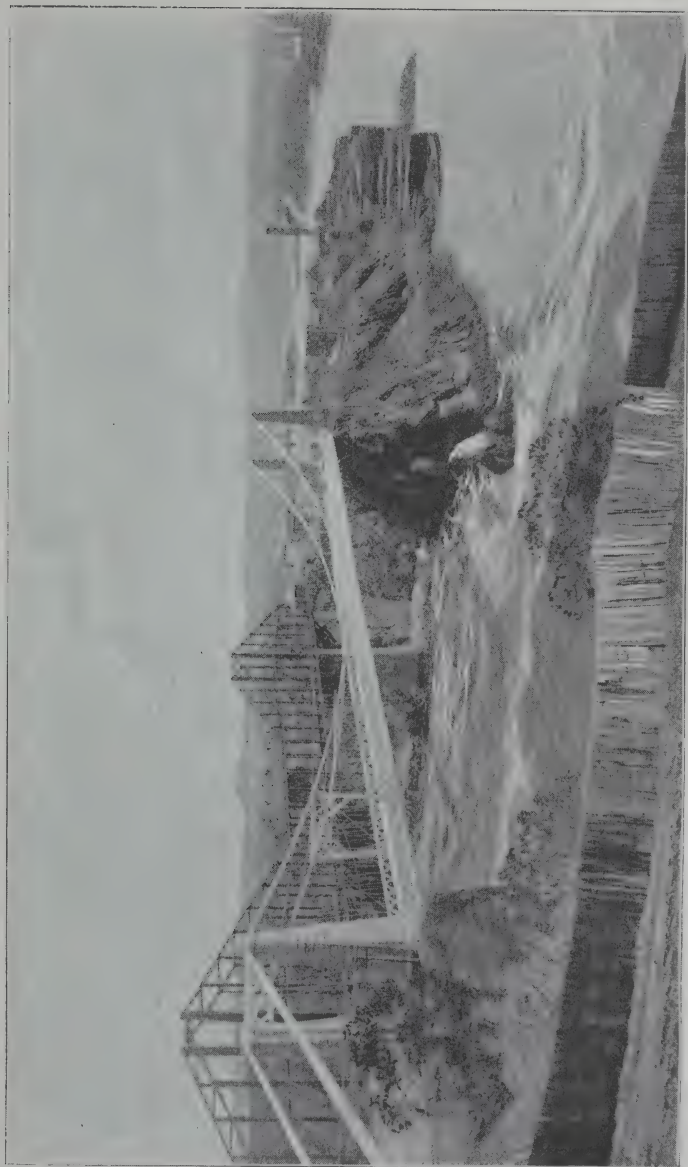
Fredericton—the capital of the province—is 86 miles from the mouth of the river. Opposite to it the Nashwaak river falls in by which the French garrison communicated with Canada by way of Miramichi in the old colony days. The tide rises to a point six miles above the city, and at low water there is a depth of 8 feet that far. For more than 50 miles from its mouth the river is 15 feet deep at low water. At Maugerville, the junction of the Oromocto, was a settlement of English colonists in 1763, the earliest in the province. It was from Massachusetts, and the only one in the present Dominion which sided with the revolting colonists. At Jemseg is the outlet of Grand Lake, an expanse 30 miles long by 3 to 9 miles wide, into which the Salmon river falls. Here was another French fort in old colony days, the scene of many conflicts after 1654 when it was taken by Cromwell's expedition. Up to this point the river flows through a level farming country with wide borders of intervale and many islands. Below Jemseg the banks become hilly and the river seems to be a long succession of lake expanses. South of Jemseg the Washademoak lake and river discharge their waters among a multitude of alluvial islands. As the St. John approaches the sea it passes through ranges of hills parallel to the coast, and extends behind them in long reaches of deep and quiet water through highlands clothed with woods. Near the city of St. John such a reach navigable for large vessels for 20 miles extends to where



KENNEBECASIS RIVER—NEAR ST. JOHN.

the Kennebecasis flows in from behind the coast range of hills. At the head of the harbour the river narrows and flows in through a gorge between walls of rock 100 feet high, and here is presented the unique phenomenon of a reversible fall. The river, which at Fredericton is half a mile wide, and in its lower stretches is much wider, is here forced to flow for 400 yards through a gorge only 400 feet across. The tide in St. John Harbour rises 25 feet, and the gorge is so narrow that it can neither admit the tide quickly nor discharge the river promptly; for the tide recedes faster than the narrow outlet can permit the returning water to flow through. At low water the level of the river is 11 to 15 feet above the sea, and at high water the level of the sea is 8 to 12 feet above the river. There are therefore two falls at every tide, one in and one out. Four times in every twenty-four hours there is for ten or fifteen minutes a period of equilibrium when vessels can pass in or out. At other times the passage is dangerous or impossible, according to the state of the tide. The directions for this unique navigation are peculiar enough to be repeated. "The falls are level, or it is still water, at about three and a half hours on the flood and about two and a half on the ebb, so that they are passable four times in twenty-four hours, about ten or fifteen minutes each time. No other rule can be given, as much depends on the floods in the River St. John and the time of high water or full sea, which is often hastened by high southerly winds." The railway crosses the chasm on a cantilever bridge 447 feet long, and near it there is a suspension bridge for ordinary traffic.

The St. Croix river is the western boundary of the province. It is the outlet of extensive chains of lakes and discharges into Passamaquoddy Bay, a magnificent



FALLS OF THE ST. JOHN RIVER—TIDE EBBING, ST. JOHN IN THE DISTANCE.

E. H. P. Photo.

sheet of deep water with good anchorage all over, and protected from the sea by the West Isles. The towns of St. Andrews and St. Stephen are on the New Brunswick side of the river. St. Andrews is an instance of a town blighted by a treaty. Its harbour is the finest on the coast—one of the best in America and open all the year round. At the commencement of the railroad era it was to become the terminus of a railway from Quebec. The Ashburton treaty cut out all the intervening territory and killed the project. Now St. Andrews is indeed a favourite summer resort because of its beautiful scenery, its boating and fishing, and its perfect summer climate; but its dilapidated wharfs, and its old-fashioned but neglected mansions, tell of brighter prospects and of better days. The St. Croix is navigable for large vessels to the falls, a distance of 25 miles. The town of St. Stephen, 17 miles from St. Andrews, is a stirring, lumbering and manufacturing town.

The Miramichi is the second river in importance in New Brunswick. It is about 220 miles long and flows into the Gulf of St. Lawrence, at right angles to the course of the St. John, for a distance of 125 miles above the forks, and searches out with its affluents all the interior of the country. Near the coast its banks are low and uninteresting, but its upper stretches and tributaries flow through a rolling country. The tide goes up 15 miles beyond the forks and the river is navigable for large vessels for 35 miles as far as Newcastle, at the main forks, and six miles beyond Chatham. These two cities, together with Douglastown, are the Miramichi known to general readers, for there is no city of Miramichi. They were very busy places in the old days of wooden shipbuilding, and they still do a good business in lumber and fishery products. The Miramichi

and all the rivers of the province flowing into the clear waters of the gulf and the Bay Chaleur are famous resorts for salmon.

Among the more important rivers on the eastern coast is the Richibucto. It has a good harbour at its mouth, where a town of the same name carries on a good business in fishing, lumbering, and canning lobsters.

The chief rivers falling into the Bay Chaleur are the Nipisiquit and Restigouche, noted salmon streams. The Nipisiquit is a shallow turbulent river flowing on a rocky bed, and with a fall of 140 feet high, and is one of the four streams which combine to form the harbour of Bathurst. The Restigouche forms in the lower part of its course the boundary between New Brunswick and Quebec, but the upper part is wholly within the former province. The river is 225 miles long and falls into the head of the Bay Chaleur in a wide estuary, and the largest vessels can pass up as far as Campbellton. It has many affluents and drains an area of 6000 square miles. The scenery on its banks is very beautiful, and the country around is covered with a network of streams abounding in fish. Campbellton and Dalhousie at the mouth of the estuary are favourite summer resorts, and, with Bathurst, are the entrances to the wild country in the north and centre of New Brunswick, where large game still have a retreat, and where streams are still full of fish, and the lakes abound with wild-fowl in their season. The Upsalquitch, one of its chief tributaries in the province of New Brunswick, is a notable fishing stream, rising in the high dividing ridge among conical hills 1500 to 2000 feet high. Its source, Upsalquitch Lake, is 750 feet above the sea, and not far from there the river falls over 400 feet in a series of beautiful cascades in a distance of less than two miles. Other

important tributaries are the Metapedia and Patapedia from Quebec, and the Quatawamkedgwick from the New Brunswick side.

All these rivers, excepting the main river St. John, rise in the centre of the province and their affluents overlap. There are very many other rivers, for New Brunswick is a land of abundant waters, but these are the most important.

New Brunswick as well as Nova Scotia possesses, at the head of the Bay of Fundy, extensive areas of marsh lands. The rivers Petitcodiac, D'Aulac, and Tantramar are of themselves mere brooks; but when the tide is up they are broad rivers two or three miles wide. The Petitcodiac flows eastwards behind the coast ridge, and turning suddenly at a place called "the Bend" empties into Shepody Bay. The tidal wave passing from the wide mouth of the bay up the narrow funnel-like estuary attains a height of 50 feet. The advance wave arrives with a bore four to six feet high, and the vessels seemingly asleep on their sides wake up, for the muddy valley suddenly becomes a great arm of the sea.

Geology

New Brunswick presents to the geologist one great obstacle to exploration in the dense forest covering its surface, and the horizontal position of the rocks over a great part of its extent. The main geological features have already incidentally been indicated. The band along the coast of the Bay of Fundy, while consisting mainly of hard Cambrian and Cambro-Silurian rocks, contains also, near St. John, small areas of Devonian, Huronian, and Laurentian. The city of St. John is built upon very hard Cambrian slates, and these have afforded

a series of fossils of great interest to geologists, because of the fulness with which they represent the life of this very ancient period. Mention has already been made of a band of granite and highly metamorphosed rocks stretching in a chain of hills diagonally across the province, and of a rolling Silurian plain beyond; there remains only to speak more particularly of the great fan-like area of the coal-bearing rocks which occupy the centre of the country. The pivot of the fan is a little west of Oromocto lake—lines drawn from thence north to Bathurst on Bay Chaleur, and east to the head of the Bay of Fundy, would approximately include an area underlain by horizontal beds of true productive coal-measures. Two seams of bituminous coal have been found, but they are unfortunately thin, although extending over a wide area. A seam of 22 to 30 inches is worked near Grand Lake. It is, near the surface, never deeper than 45 feet, and sometimes brought above the surface by inequalities of ground. An area of over 40 square miles has been proved to exist in one locality. Coal has been found also in widely distant places; but, so far, always in thin seams. What may be concealed in the unexplored lands of this extensive forest area it is impossible to foresee, but geologists have, so far, given little hope of the discovery of thicker seams. As before stated, the Carboniferous area of New Brunswick is continuous across the isthmus with that of Nova Scotia, so that from Miscou on the Bay Chaleur, to Sydney on the Atlantic coast of Cape Breton, the whole coast of the Gulf of St. Lawrence is bordered by coal-bearing rocks.

Minerals

Since the exhaustion of the deposit of Albertite in Albert county, New Brunswick has not developed any

notable mining interests. The Grand Lake field is being worked, and the farmers over all that region have for a very long time been using the coal lying just under the surface, but no exports are made. Iron ore occurs in many places, and in great abundance, especially near Woodstock. Manganese, antimony, and copper are also found, but there have been no exports of late years. Gypsum was exported in the year 1895-96 to the value of \$71,441, and, as in Nova Scotia, any imaginable quantity is at hand waiting for a market. At St. George, at the mouth of the river Magaguadavic, there are quarries of very fine red granite, superior in quality to the Aberdeen granite.

Agriculture

The agricultural resources of the province have never been developed, because the energies of the people have always found outlets on the sea or in lumbering and fishing. It contains large tracts of very rich farming lands along the valleys of the rivers and on the marsh lands at the head of the Bay of Fundy. The marshes of the Tantramar alone cover 40 square miles.

Miles on miles they extend level, and grassy, and dim,
Clear, from the long red sweep of flats, to the sky in the distance
Save for the outlying heights, green-rampired Cumberland point ;
Miles on miles outrolled, and the river-channels divide them—
Miles on miles of green, barred by the hurtling grass.

The country about and above Woodstock on the upper St. John is rich farming land, but the finest farms are in Sussex vale in King's County. The whole central area over the horizontal Carboniferous rocks is suitable for agriculture. The land along the coast of the Bay of Fundy is rocky, and frequent fogs cool the summers and make the winter

climate raw; but, in the interior, the climate becomes more continental, and, without being quite as cold as at Quebec in winter, or as warm as at Montreal in summer, the weather is bright and the sky is clear. The snow is always sufficient for the winter roads, the summer rains are abundant for the growing crops, and water is at hand everywhere for cattle. Everything may be grown which will grow in a temperate climate. Wheat has of late years been unprofitable there, as elsewhere in the east, because of the competition of the new western prairie farms, and the farmers have turned their attention to other crops and to dairying. Maize is grown in the interior of the province away from the coast and is used as fodder for cattle. It has been calculated that the province contains 14,000,000 acres of arable land, a great part of which has not yet come under cultivation.

New Brunswick is a forest province, and excepting over a small area where the land is very rocky, was densely covered with trees. Much of the province has been culled over by lumberers, and the best timber has been cut. In former years, before wooden ships had been displaced by iron steamers, the forests were largely drawn upon for shipbuilding, and the export of lumber is still carried on very extensively. The forest renews itself, and the smaller trees, spared by the axemen, grow faster with more room and light. It is forest fires which are most to be feared. A fire ever to be remembered occurred in 1825 on the lower Miramichi, when 3,000,000 acres of forest were swept away, \$1,000,000 of property destroyed, and 160 lives lost. The town of Newcastle was destroyed, and human beings and domestic cattle took shelter from the heat in the rivers in company with the wild creatures of the woods. The flames advanced on a front of 50 miles, and the north-eastern part of

New Brunswick bears evidence still of its desolating effects.

Government

New Brunswick is governed by a lieutenant-governor appointed by the Dominion Government and by one chamber of 46 members, called the legislative assembly, elected on a very popular franchise. The executive government consists of 7 members, and is responsible to the assembly in the manner usual in the British colonies.

There is also a system of local municipal government. The unit is called a parish and annually elects two members to the County Council, which elects a warden. Cities and towns are usually incorporated under special statutes. The seat of government is at Fredericton, a city of 6502 inhabitants, very quiet and very pretty. The University of New Brunswick is at Fredericton. On the opposite side of the river is Gibson, where are large lumber and cotton mills. Fredericton is the central point for sportsmen who desire to enter the wilderness in pursuit of caribou or moose, or to fish in the well-stocked waters of the interior.

Education

The Executive Council of the province, together with the Chancellor of the University and the Superintendent of Education, form a Board of which the Superintendent is secretary and administrative officer. There is a government normal school for training teachers, and a staff of inspectors for supervising the teaching and to see that the laws and regulations are carried out. The schools are free and undenominational, and may

be primary, advanced, high, superior, or grammar schools according to the extent and needs of the district they are provided for. They are supported by legislative grants supplemented by local taxation voted in district, parish, or county meetings of rate-payers. The schools in the cities are managed by boards of trustees, one half appointed by the Government and one half by the City Corporations. The keystone of the system is the University of New Brunswick, founded in 1828, an undenominational institution to which a certain number of students from each county are admitted without payment of the usual fees, and which has the power to grant university degrees.

Cities

The real centre of provincial life is at St. John, which is situated on a fine harbour at the mouth of the river St. John, open all the year round, for even if it were cold enough to freeze, no ice can be formed strong enough to resist the strength of tides which rise 25 feet. Partridge Island at the mouth of the harbour protects it from the sea. The population of St. John is 39,179. The pursuits of the people are mainly maritime, and very many residents of the city derive their incomes from the earnings of vessels which are trading in distant seas. A large amount of shipping is owned there, and St. John vessels may be met in every port in the world. The chief industry in former years was shipbuilding. During the past fifty years ships to the value of eighty millions of dollars were built, but the decrease in the shipping interest is now being made up by the introduction of general manufacturing. Owing to the decline in demand for wooden ships, and the immense fire which

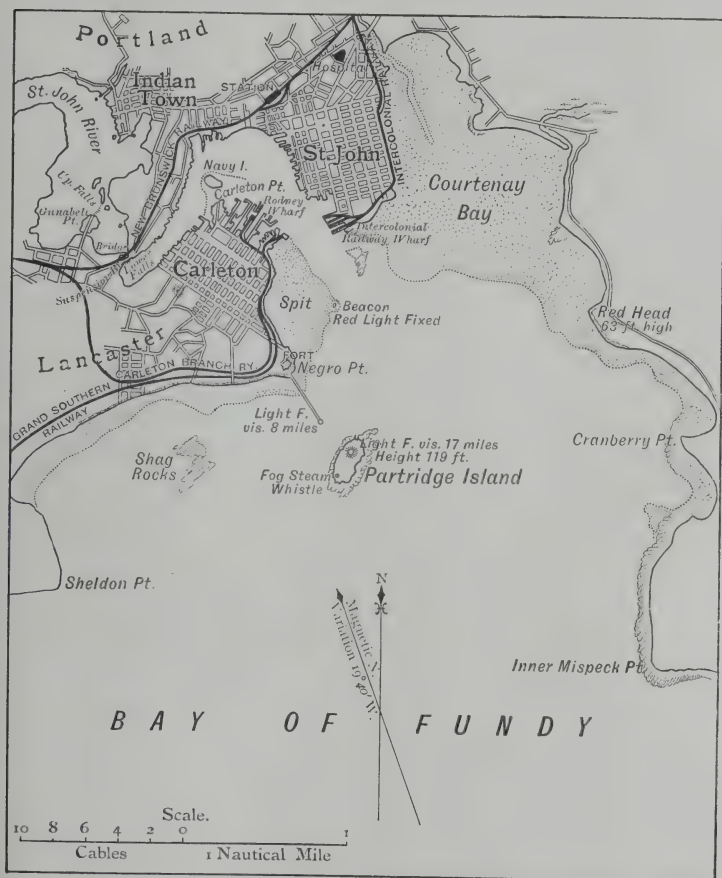
swept away the business part of the city, the population decreased five per cent in the last decennial period. The city is also a centre of supply for a large extent of country and does a large business in lumber and products of the fisheries. The exports during the year ending June 30, 1896, amounted to \$4,350,271 and the imports to \$3,550,261. In the same period 1509 vessels with



HARBOUR OF ST. JOHN, N.B.

an aggregate tonnage of 498,576 tons cleared from the port. Steamers connect St. John with all ports on the Bay of Fundy, and regular lines are established with England, the West Indies, and the large cities of the United States. Since the extension of the Canadian Pacific railway to St. John its business as a winter port has increased, and there are regular steamships in winter to Liverpool, London, Glasgow, Belfast, Dublin, and Aberdeen.

In 1877 the whole business part, as well as the best residential part of the city, was swept away by a



Stanford's Geog. Estab.

ST. JOHN, NEW BRUNSWICK.

great fire. In nine hours 1612 buildings were reduced to ashes, and vessels in the harbour were burned before

they could loose from their moorings. Nine miles of streets were swept clear to the bed rock, and from twenty to thirty million dollars of value was destroyed. That was in the year 1877, but nothing is heard of it now and the city has been entirely rebuilt.

There are few large cities in the province. Moncton at the "Bend" of the P'titcodiac is the next in size. It is a manufacturing town with 8765 inhabitants, and is the centre of the Intercolonial railway system. Chatham, with 5644 inhabitants, and Newcastle six miles away, with a population of 4006, are the chief towns on the Miramichi. St. Stephen on the St. Croix is a stirring progressive town with 2680 people, and Sackville at the head of the bay has a population of 4982; Mount Alison College, the chief educational institution of the Methodist Church in the maritime provinces, is situated there, and St. Joseph's College, a Roman Catholic institution, is at Memramcook, a neighbouring place.

Communications

The aggregate railway mileage of New Brunswick is 1404 miles. Railways extend along the whole outer coast. Owing to the Ashburton treaty the Intercolonial railway had to make a long detour and runs along three sides of the square of the province. The Canadian Pacific railway follows the direct line to St. John and enters the province on the west side, but it has to pass through the state of Maine. Fredericton is connected with the Miramichi by rail and with central Canada by another line through Edmundston on the upper St. John, and by a branch with the Canadian Pacific system. The Intercolonial railway has branches connecting with Richibucto, Buctouche, and Shippegan on the Gulf of St.

Lawrence; with Quaco and Hillsborough on the Bay of Fundy, and with Chipman at the head of Grand Lake. St. John is connected on the west with two lines of road.

Resources

The province depends largely upon the products of the forest and the sea. Its fisheries are extensive and productive. The total number of vessels engaged in the fisheries in 1894 was 6483 with 11,650 fishermen, and the value of the catch was \$4,351,527. The chief items were—smelts, \$336,400 ; salmon, \$454,974 ; sardines, \$278,706 ; herrings, \$1,127,197 ; lobsters, \$531,570. The sardine fishing is almost peculiar to New Brunswick. The fish are exported fresh to the United States, and on account of the customs laws 35 canneries are kept going in Eastport, Maine, with sardines caught in New Brunswick waters. Manufacturing industries are extending. The census of 1891 gave the output of manufactured goods at \$23,849,655.

The Bay Chaleur—for so it is always called, though Jacques Cartier in 1534 finding the weather very warm there named it the Baye des Chaleurs—is a deep extension of the Gulf of St. Lawrence, without a rock, reef, or shoal to impede navigation, separating, as far as it goes, the provinces of New Brunswick and Quebec. The Indians called it “the sea of fish.” It is 75 miles long and from 14 to 25 miles wide. It is navigable by the largest ships and has many good harbours. The Restigouche river falls in at the head of the bay and continues it by a deep estuary 2 to 3 miles wide for 17 miles farther. The land rises at a little distance up the river valley, and the scenery on the Restigouche and at the junction of the Metapedia is very fine. On the

north side the hills rise from 1000 to 2000 feet; on the south side, although the height does not exceed 815 feet, there are, as elsewhere in the province, detached mountains of considerable height. One of these—the Squaw's Cap, near the mouth of the Upsalquitch—is 2000 feet high.

Miscou, the extreme point of New Brunswick upon the bay, is a good harbour with four to six fathoms, but Shippegan Sound not far off is secure for vessels of the largest size. It has been proposed to make Shippegan the terminus of a line of ocean steamers to Canada connecting with the Intercolonial railway. Caraquette and Bathurst both have harbours for vessels of moderate draught, but Dalhousie at the head of the bay has a fine harbour and is the shipping port of the lumber floated down the Restigouche.

Dalhousie is the last port of New Brunswick, and on crossing the Restigouche the province of Quebec begins. The north shore of the bay is bordered by red sandstone cliffs and wide beaches of shingle. The high table-land of Gaspé rises in the rear. The shore is settled by fishermen, for the fishery in the bay is still fair though the great productiveness of former years has been destroyed by recklessness. The sandstone formation is connected with the Carboniferous of New Brunswick, and thin seams of coal have been observed.

Game

The Dominion of Canada abounds in resorts for sportsmen, but none of them are so attractive as the province of New Brunswick. It is a great square and the borders only are settled; the interior is a wilderness penetrated by streams of every size, affording access by

canoe and paddle to its wildest recesses. Here in the summer may be seen many a sportsman's camp and many even with ladies and children enjoying the healthful life of the woods. The salmon fishing on the Restigouche is reputed the best in Canada. The fish are very large upon it and its chief tributary, the Metapedia. All the tributaries of this fine river are widely known salmon streams. From the head of the Bay Chaleur the sportsman may strike into the very heart of the wilderness about the head waters of the Tobique, the Nipisiquit, and the Miramichi. This region may also be reached from Fredericton on the other side. Here moose and caribou are abundant and of late years have been increasing. A sportsman familiar with this region from youth reports that in the fall and winter of 1896 moose were more plentiful than they had been for thirty years. Many sportsmen come every season from the United States, and wealthy people from the large cities have secured leases along the rivers and have built hunting lodges for their holiday convenience.

The following are some of the leading facts connected with the trade of the province:—

Imports, 1895-96	\$5,406,648
Exports ,, 	7,967,911

The exports consisted of:—

Produce of the Mine	\$114,950
„ ,, Fisheries 	798,270
„ ,, Forests 	5,543,612
Animals and their products	589,721
Agricultural products	392,118
Manufactures	457,722
Miscellaneous	11,448

NOTE TO CHAPTER VII

The following books will be found of use if more detailed information be required. In the case of this, as of the other provinces, reference should be made to the Transactions of the Royal Society of Canada, where many important geological, geographical, and historical papers will be found :—

ADAMS, A. LEITH.

Field and Forest Rambles ; with notes and observations on the Natural History of Eastern Canada. London : Henry S. King and Company, 1883.

HIND, HENRY YULE.

Preliminary Report on the Geology of New Brunswick. Fredericton, 1865.

MATTHEW, G. F.

Volumes I. to XII. of the Transactions of the Royal Society of Canada contain an exhaustive series of papers on the fossils of the St. John group.

The following is a list of Reports, with their dates, made by officers of the Geological Survey, arranged by localities :—

NEW BRUNSWICK.

C. Robb, 1869, 1870 ; L. W. Bailey, 1875, 1891 ; G. F. Matthew, 1875-77 ; R. Chalmers, 1884-86, 1888-89, 1894.

CENTRAL PORTION.

Bailey and Matthew, 1873-75, 1876 ; L. W. Bailey, 1884-85.

NORTHERN PORTION.

R. W. Ells, 1880-82, 1885.

SOUTHERN PORTION.

Bailey and Matthew, 1870-71, 1876-79 ; L. W. Bailey, 1878 ; R. W. Ells, 1878 ; G. F. Matthew, 1878.

CHARLOTTE COUNTY.

G. F. Matthew, 1877-78.

ALBERT AND WESTMORELAND COUNTIES.

Bailey and Ells, 1877, 1885.

NORTH-WESTERN PORTION.

Bailey and McInnes, 1886-88.

GRAND MANAN ISLAND.

Bailey and Matthew, 1871.

CHAPTER VIII

PRINCE EDWARD ISLAND

THIS island is the garden province of the Dominion. It is more like an English shire than a Canadian province. Its inhabitants are for the most part farmers, and they have cleared almost the whole island and brought it under cultivation.

Prince Edward Island is situated on the south of the Gulf of St. Lawrence in a great bay formed by the concavity of the coasts of New Brunswick and Nova Scotia, which, from Miscou Head to the North Cape of Cape Breton, curve round it. The island adapts itself to its position by curving to correspond with the encircling shores of the sister provinces and its northern coast-line presents to the gulf a parallel concavity.

The island is 145 miles long from East Point to North Cape, but is most irregular in width varying from 4 to 27 miles across. It is exceedingly irregular also in outline, for the land is penetrated by deep bays and tidal streams to such an extent that it has barely escaped being divided into three parts. From the head of Hillsborough river a portage of one and a half miles would place a boat in Savage harbour on the north shore and cut off the whole eastern end of the island. Farther to the west the distance between the heads of the creeks falling

into Bedeque and Richmond Bays is so short that it measures only two miles on the map, and at high tide it is really much less. This indentation almost separates the western third of the island.

Nothing would be gained in clearness of conception by considering the island in three divisions, for the whole of it is of uniform character in every respect saving that the nearest approach to a highland is in the central part where the land rises on the West river into picturesque wooded hills, but everywhere the country is rolling and almost everywhere it is cultivated. This general uniformity is not monotonous, for there are always differences in the undulations of the surface, differences in the little streams running in the valleys to the sea, and differences in the clumps of trees or patches of woodland which conspire to give variety to what might otherwise be a monotony of pleasing landscape.

The total area is 2133 square miles and it is inhabited by 109,078 people, so that there are 54.4 people to the square mile—the exact density of the population in Caithness, and a little more than that of Perthshire, but when compared with Quebec 6.5, or Ontario 10, or Nova Scotia 22 to the mile, Prince Edward Island is thickly populated for a Canadian province.

The surface is nowhere higher than 500 feet above the sea. The underlying geological formation is the Trias and the rock is new red sandstone; but rock is very seldom met with, and such exposures as are found are soft and coarse. These rocks are newer than the coal formation, and productive coal measures may be supposed to exist there also, especially as coal is found on the adjacent Nova Scotia shore. If, however, there be coal it is believed by geologists to be very deep down. The upper coal measures might be reached in some localities



CLARK'S RIVER, P. E. ISLAND.

at a depth of 500 to 2000 feet, but if the beds should be found too thin to be worked with profit there would be little prospect of reaching profitable beds at a less depth than 3000 or 5000 feet.

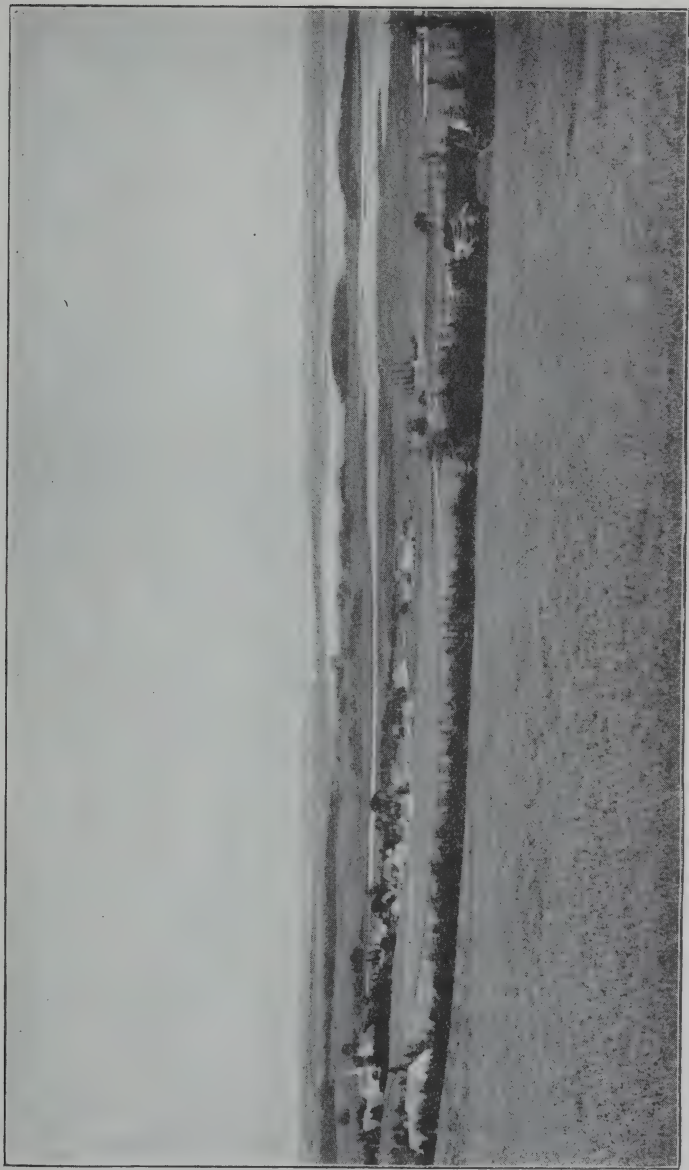
The soil of the island is an open sandy loam, of a deep red colour, and the red soil, contrasting with the vivid green of the meadows, gives a very distinctive



INTERIOR OF THE COUNTRY, P. E. ISLAND.

character to the landscape. It is of all soils that best suited for oats and potatoes, and these are the staple crops of the island. Wheat is still raised, but cannot now be grown at a profit. The soil will, however, produce any crop which can be grown in a temperate climate. The farmers of recent years are commencing to grow maize for fodder; barley is also a favourite crop and is extensively grown.

There cannot be any general hydrographical system, for the streams flow transversely and the island is narrow. They are all tidal and, the land being low, the tides flow



POWNALL—VILLAGE ON THE SEA-SHORE, P. E. ISLAND.

to the heads of the streams. Three beautiful rivers converge in Charlottetown harbour—the Hillsborough, and the West or Elliot, and the North or York rivers. The Hillsborough rises close to the north shore and flows across the island at its widest part. These rivers are all deep and steamers go up the Hillsborough to its very head.

The climate of the island province is not so extreme as that of some of the interior provinces, but yet it is not a maritime climate; for it is embayed and sheltered from the influence of the outer ocean. There are few fogs and the sky is clearer than on the Atlantic coast, the summer is warmer and the winter is colder than in parts of Nova Scotia. Spring does not come in, as in Quebec and Ontario, with a rush, for it is retarded by the floating ice of the upper waters on its way seawards. The crops do not therefore start as early as in the St. Lawrence valley or even in Manitoba or the far Northwest. On the other hand the fall lingers later. The harbours are closed in winter by ice. That of Charlottetown freezes up between December 15 and 21 and opens about April 7. The harbour of Georgetown on the east coast is open longer than any other on the island.

The Strait of Northumberland separates Prince Edward Island from the neighbouring provinces. It is from 9 to 31 miles wide. The projecting capes of Nova Scotia interlock with those of the island, so that viewed from either end the strait seems to be a bay. Jacques Cartier in 1534 coasted along the western coast and crossed over to the Miramichi. He called the opening of the strait the Bay of St. Lunario, and so it remained for sixty years longer, for it was not until the time of Champlain that the island began to be separated on the maps under the name of the island of St. John.

The coast is uniformly low. East Point is a low cliff of red sandstone 30 to 60 feet high, and North Cape, the other extreme point, is precisely similar. Between these points the concavity of the island forms a bay 91 miles long and 22 miles deep, and in its whole length the north shore is a continuous series of sand beaches and long spits or bars of fine sand, beaten hard by the incessant impact of the waves. The wide bays which on the north penetrate the land are cut off from open water by long narrow sandbanks with occasional openings, through which small vessels may pass. These sandy beaches are favourite resorts for bathing in summer, for they are smooth and compact and the water deepens very gradually. Two of these beaches are each 20 miles long. St. Peter's Bay, Tracadie Bay, Rustico Bay, New London Bay, Richmond or Malpeque Bay, and Cascumpec Bay are the chief of these sand-locked bays. The sand-dunes are highest near New London, where they are 40 feet high; but as a rule they rise to a height of 11 to 20 feet only. Close behind these sandy beaches the forest stands protecting the farm land. The sands are derived from the waste of the soft red sandstone rock, but the oxide of iron is dissolved by the sea, and though the rocks are red the sand is white.

From North Cape along the west coast to Cape Egmont there are no harbours. The shore is of red clay or red sandstone—low and with occasional beaches where boats may land in fine weather. Cape Egmont on the south shore is formed of sandstone cliffs 50 feet high. It marks one side of Bedeque Bay at the head of which is a good harbour, that of Summerside, but somewhat intricate to enter. Cape Traverse is the nearest point to the mainland, for there the promontory of Cape Tormentine stretches over from Nova Scotia to a distance of only nine miles

from the island, and here it is that travellers cross in the depth of winter if the harbour of Georgetown is frozen.

The harbour of Charlottetown is one of the best in America and one of the most pleasing to the eye. Any number of vessels of the largest size may find room in it, and the three deep tidal rivers stretch up from it into a charming country of cultivated farm and meadow land with quiet rural scenery diversified by low hills clothed with woods.

On the east coast is the harbour of Georgetown or Cardigan Bay, second only to that of Charlottetown in depth and commodiousness.

Communications

There is an excellent service of steamers connecting Charlottetown and Summerside with Pictou in Nova Scotia and Shediac in New Brunswick respectively, and after these ports are closed a steamer runs to Georgetown. For a few weeks Georgetown may be closed and then travellers must cross in ice-boats from Cape Tormentine to Cape Traverse. This is occasionally very disagreeable when the ice is running with the tides and the weather is thick. The distance is only nine miles, but such modes of transit are not suited to modern ideas of comfort, and a scheme is proposed to tunnel under the strait. If such a feat of engineering skill be ever achieved it will remove the only drawback to a residence on Prince Edward Island. Regular lines of steamers also connect in the open season with Quebec and Montreal, and with Boston and Halifax. A railway, owned and managed by the Dominion Government, runs from end to end through the island with branches. It is 210 miles in length and almost every hamlet on the island is reached by it.

Cities

Charlottetown is the capital of the province. It has a population of 11,374 and is the centre of supply.

Summerside is a town of about 3000 inhabitants with a considerable trade in exporting the produce of the western part of the island. This part of the coast is noted for its oysters.

Georgetown and Souris are small towns on the eastern shore. Prince Edward Island is a country of farmers and they live all over it. There is very little land not taken up. The towns are necessarily few, for there are no manufactures to attract the people into cities.

Government

Prince Edward Island is governed by a lieutenant-governor appointed by the Dominion Government and a legislative assembly of a peculiar nature. It is composed of 15 councillors elected on a property qualification, and 15 members elected on a popular franchise. The executive government consists of 8 members, and is responsible to the assembly, and must always command a majority therein as in the other provinces. There are no municipal institutions for local government.

Education

The supreme authority is the executive council or ministry of the day. The Superintendent of Education acts as secretary of the board and administers the system through school inspectors. There is a normal school for training teachers, and a college for higher studies. The schools are primary, advanced, and high schools. The

expenses are paid by government grants supplemented by local assessments. They are undenominational, but the children read the Bible at the opening of the school. No comments are to be made, and if their guardians object to the reading, children need not be present at it.

Exports

The chief exports of the island are agricultural produce and fish products. Lobster canning is carried on to a considerable extent.

The value of fish products exported in 1895 was \$437,305. Oats were exported to the value of \$145,329 and potatoes to the value of \$92,057.

In the year ending June 30, 1896, 94 vessels with a total tonnage of 59,892 tons cleared for sea from the port of Charlottetown.

The total exports of the island in the year 1895-96 were \$979,979 and of imports \$490,245. The trade of the province is chiefly with the other provinces, and does not show in the "Trade and Navigation" reports.

NOTE TO CHAPTER VIII

For further details reference may be made to—

GEOLOGICAL SURVEY REPORT, PRINCE EDWARD ISLAND.

R. W. ELLS, 1884.

DAWSON, SIR WILLIAM, and HARRINGTON, B. J.

Report on the Geological Structure and Mineral Resources of
Prince Edward Island. Montreal: Lovell, 1871.

CHAPTER IX

OLD CANADA—THE ST. LAWRENCE PROVINCES

Land of mighty lake and forest ;
Where the winter's locks are hoarest,
Where the summer's leaf is greenest,
And the winter's bite the keenest ;
Where the autumn's leaf is searest,
And her parting smile the dearest.

ALEX. M'LACHLAN.

THE colony of New France was ceded to Great Britain in 1763, in its full extent, and included the whole basin of the St. Lawrence system of lakes and rivers. In the year 1791 it was divided with the object of forming a new province for the United Empire Loyalists—a body of refugees who, at the recognition of independence of the thirteen revolted colonies, found themselves homeless, their property having been confiscated and they themselves proscribed. The settled part of New France was at that time occupied by French Canadians, who had been continued in the full and undisturbed enjoyment of their religion, language, and laws, so that even the tenure of the land was feudal. It was intended to commence at the western limit of the lands then actually held *en seigneurie*, and to lay the foundations of an English province, where all grants of land should be in free and common socage, where the common law of England

should be the basis of the organised community, and the English language should be the language of the people. The provinces so separated were called respectively Upper and Lower Canada. In 1841 they were reunited, and these divisions were called Canada West and Canada East. When all the British American provinces were confederated in 1867, these two became the provinces of Ontario and Quebec, and entered into new relations with each other. Thenceforward they ceased to be parts of one province, and each became an integral province of one dominion. They are still sometimes spoken of as "Canada" in the narrow sense of the word, sometimes as "Old Canada," and it has been proposed to call them the St. Lawrence Provinces—a suitable name, since Quebec is the province of the river, and Ontario is the province of the lakes.

While these two provinces are thus indissolubly united physically, by the simple fact of forming part of the same great valley, and although, down to the year 1791, they had one history, they are socially very different, on account of the circumstances above stated. It is that very fact which gives special interest to the student of political science; for in Canada questions of the most complicated nature have had to be faced and determined without the possibility of shirking them or putting them off upon a future generation. Plain men have come from their farms and their businesses and have become statesmen by successfully grappling with questions which have agitated older countries for centuries. That a people should be homogeneous over the whole extent of its territory has, no doubt, many advantages and, to an Englishman, it would seem an economy of time and money if all the world were to speak English. Such a world would be in danger of becoming excessively

monotonous. On the banks of the St. Lawrence, society has an additional interest in the fact that the two leading races of Europe are strongly, almost equally, represented, and that they have learned mutual respect and, without ceasing to be English and Protestant on the one hand and French and Catholic on the other, have learned to unite for the objects of common Christian civilisation upon the basis of a toleration which is the result of incessant intercommunication and of intimate knowledge of each other.

Climate

A glance at the map will show that the St. Lawrence flows diagonally north-eastwardly from Niagara to Belle-isle, and that, therefore, in the more southern counties at the west the climate must be milder. Nevertheless, there is a general description possible which, with the modifications stated in describing each province, may be of use to form a preliminary idea of the conditions of life in Old Canada. The country has suffered much from the exuberant athleticism of its youth brimming over in winter carnivals, and by the graphic pens and pencils of newspaper correspondents giving literary and pictorial finish to their descriptions. It is perfectly true that such a disagreeable thing as a thaw seldom occurs in winter in Canada, and therefore it becomes possible to pile up blocks of ice into structures having the outward aspect of buildings; but the undue exaltation of these ice "palaces" gives a very false impression of the conditions of life in Canada. Any Canadian who has experienced the raw and chilly winters of a great part of western Europe knows the truth of the adage, that any one who wants to be warm in winter must go to a cold climate. It is, however, difficult to divide Ontario from

Quebec climatologically, because Ontario also stretches north to Hudson's Bay and includes a region north of Lake Superior, where the winters are as cold as anywhere in Quebec. The climate of Ottawa, in eastern Ontario, is, if anything, colder in winter than that of Montreal. The range of temperature is almost the same at Sault Ste. Marie as at the city of Quebec. That portion of Ontario known as the "western peninsula," lying between the great lakes Ontario and Huron, enjoys a milder climate than the rest of Canada, and that portion lying along the shores of lake Erie and the Niagara river is still more favoured. In order to show the variation, the following table has been compiled from the meteorological returns of 1890, the last completed returns to hand at the writing of this chapter, and places have been selected on a great curve from Quebec south-west to Niagara and north-west to Sault Ste. Marie. This range will show the climate of New France or Old Canada.

That the climate, since the discovery of the country, has changed very little is clear from the reports of Cartier, Champlain, and the "Jesuit Relations" concerning the crops grown by the Huron-Iroquois Indians. These were not wandering tribes, but had permanent towns. The statement has been made, in places which should be sources of more accurate information, "that corn is more a garden vegetable than a farm product, excepting in southern Ontario." Nothing could be more untrue, for every student knows, that from the discovery of the country, maize has been a staple crop from Montreal to Georgian Bay. It was the staple food of the Huron-Iroquois at Montreal in 1535, and the staple food of the Hurons on Georgian Bay in 1615, and of their kinsmen the Tobacco nation and the Neutral nation. Maize, pumpkins, and beans were grown for food, tobacco for solace, and sun-

flowers for ornament. They had no other vegetable food, and they raised large quantities of maize and stored it for winter. There can be no possible mistake about a fact as patent upon the pages of the old writers two hundred years ago as it is in the agricultural returns and the "Trade and Navigation" tables of to-day.

METEOROLOGICAL TABLE FOR ONTARIO AND QUEBEC.—TEMPERATURE
FAHRENHEIT FOR THE YEAR 1890.

	Annual mean.	Highest.	Lowest.	Mean in Quarterly Periods.			
				Winter.	Spring.	Summer.	Autumn.
Quebec.	36.58	86.0	-34.3	14.80	46.27	60.33	24.93
Montreal	41.03	88.8	-21.6	20.17	52.03	63.73	28.20
Ottawa	40.46	93.0	-19.6	19.57	51.43	62.53	28.30
Toronto	45.03	89.4	-2.7	28.37	52.53	63.10	36.10
Niagara	46.50	91.0	0.0	30.07	54.03	64.80	37.10
Sault Ste. Marie	38.82	87.0	-34.0	15.80	47.80	58.77	32.90

METEOROLOGICAL TABLE FOR ONTARIO AND QUEBEC.—TOTAL
PRECIPITATION FOR THE YEAR 1890.

	Inches of Rain.	Inches of Snow.	Inches of Total Precipitation reduced to terms of Rain.
Quebec	31.74	133.5	45.09
Montreal	33.97	114.5	45.42
Ottawa	25.25	71.3	32.38
Toronto	32.12	52.6	37.38
Niagara	35.75	35.7	39.22
Sault Ste. Marie	no report		
Mean for Ontario	27.83		
„ Quebec	25.43		

A description of the climate of the settled portion of the province of Quebec is equally applicable to the climate of Ontario, north of a line drawn west from Montreal through Ottawa to the Muskoka district on Lake Huron. The climate of the peninsula south of that line is indicated by the figures for Toronto and Niagara in the preceding table. In reading these tables it should be

remembered that, if the extremes are given as well as the mean, these extremes do not endure for any length of time. Week after week will pass while the thermometer registers from $+15^{\circ}$ to $+30^{\circ}$. Then a cold wave will sweep eastwards and send the mercury down below zero. Such "cold snaps" may last three days, and there may be three or four of them in a winter. The sky is very blue, and at night the stars look large and the snow creaks under the foot; but these "spells" soon pass away and the temperature returns to 10° or 15° below freezing-point; only that, after January, the bright sun thaws enough at mid-day to make the roofs drop a little on the sunny side of the streets and in sheltered positions in the country.

Although in some years there may be two or three days' thaw, the sleep of nature in winter is profound. No dreams disturb her repose and waken her to premature activity. But when the warm white coverlet begins to disappear she never hesitates or goes back with the provoking indecision of other lands, but spring comes on with a firm and steady foot. The following is from a poem descriptive of April in the country near Ottawa:—

In the warm noon the South wind creeps and cools,
Where the red-budded stems of maples throw
Still tangled etchings on the amber pools,
Quite silent now, forgetful of the slow
Drip of the taps, the troughs, and trampled snow,
The keen March morning, and the silvering rime,
And mirthful labour of the sugar prime.

The first Canadian nobleman (ennobled by Louis XIV.) was Pierre Boucher, whose descendants are widely spread throughout Canada to-day. He was governor of Three Rivers in 1653 and defended the infant settlement against the Iroquois at a very critical time. He died

at Boucherville, near Montreal, at the age of ninety-seven, a standing testimony to the healthfulness of the climate. Among innumerable other public services to his country this gentleman wrote a *Natural History of New France, commonly called Canada*, and although, at the time he wrote, Montreal was only a perilous outpost in the Indian country, and the forest had not been cleared, his description of the general conditions of life are still to a great extent true. He says:—

“Speaking of New France as a whole, I may say that it is a good country, and one that contains in itself a good portion of all that can be wished for. The soil is very good, it produces wonderfully well, and is not ungrateful; we have had experience of that. The country is covered with dense and very fine forests, that are stocked with numbers of animals of various kinds; and what is of still greater consequence is that those forests are intersected by large and small rivers of very good water and have in them numbers of springs and fountains; besides which there are large and small lakes, bordered, as well as the rivers, by fine large prairies which produce as good grasses as there are in France. In these lakes and rivers there are great numbers of fish of all kinds, very good and very dainty; waterfowl are also to be met with in great numbers on these lakes and rivers. The country is a very healthy one; animals brought from France thrive very well in it. One sees here many fine plants that are not to be found in France; and there are few plants that are injurious to man. . . . The climate is different in different places; but I may say in general that in the coldest places here in winter, is a more cheerful season than it is in France.”

The translation quoted is by one of Pierre Boucher's descendants. The forest has been cleared over a wide

extent, and the descendants of the Iroquois, who howled after scalps round the palisades of Boucher's little fort, are now farmers on the Grand river ; but in the north are still the forests where his description would hold in every particular, and the climate is still the same.

Forest

The province of Quebec extends over so wide an area, and the conditions of climate vary so much, that it is not possible to make general statements applicable to the whole province. The sub-Arctic forest comes down to the water-parting of Hudson's Bay, and has been treated of in Chapter III. The forest of southern Labrador consists, for the most part, of sub-Arctic species, as also the forest on the high plateau of the Gaspé peninsula ; but throughout the rich country bordering on the rivers—not only the level plain of the St. Lawrence and Richelieu, but the Laurentian country to the north up to the water-parting—and over the rolling pasture-lands of the Eastern Townships, a different forest prevails—a forest similar to that already described as existing in the inland counties of the Maritime provinces. At page 142 a list of 32 species is given, and it is not necessary to repeat it here. Besides these, the following additional species are stated by Professor Macoun to occur in the forests of Quebec :—

Broad Fruited Maple	. . . . .	<i>Acer dasycarpum.</i>
Red Fruited Thorn	. . . . .	<i>Crataegus coccinea.</i>
Slippery Elm	. . . . .	<i>Ulmus fulva.</i>
Rock Elm	. . . . .	<i>Ulmus racemosa.</i>
Nettle-tree	. . . . .	<i>Celtis occidentalis.</i>
Bitternut	. . . . .	<i>Carya amara.</i>
Shell-bark Hickory	. . . . .	<i>Carya alba.</i>
Blue Beech	. . . . .	<i>Carpinus Caroliniana.</i>
White Oak	. . . . .	<i>Quercus alba.</i>
Cottonwood	. . . . .	<i>Populus monilifera.</i>
Red Cedar	. . . . .	<i>Juniperus Virginiana.</i>

It is these mixed forests which give such a charm to these provinces. When the work of the year is done, when the forest has flowered and fruited and made its growth, it retires to its winter sleep in such a blaze of colour as no painter has ever dared to put upon canvas. Those who have seen it all their lives look upon it with unfailing admiration, and at every succeeding fall they wonder whether the brilliant crimsons or the browns, warmed with red and yellow, or the bright yellows, be the most beautiful or the most effective contrast to the deep green of the pines and spruces. Then the fair blue sky and the sparkling of the flowing water, or the reflections in quiet lakes all through the autumn weather, and the still and mysterious Indian summer at the end, throw over the woods a wonderful charm, and make, as the poet whose verse heads this chapter has well said, the parting smile of nature as she sinks to rest, the dearest of all her varied aspects.

In like manner, passing westward, the forest of the province of Ontario repeats the species found in Quebec, but, in the peninsula to the south-west inclosed by the lakes, the milder climate favours new species, and we pass into a region of oaks and hickories. The trees superadded to the lists previously given are these; to quote again from Professor Macoun:—

Cucumber tree	<i>Asimina triloba</i> (Duval).
Tulip tree	<i>Liriodendron tulipifera</i> .
Kentucky Coffee-tree	<i>Gymnocladus Canadensis</i> .
Judas tree	<i>Cercis Canadensis</i> .
Honey Locust	<i>Gleditschea tricanthos</i> .
Crab Apple	<i>Pyrus coronaria</i> .
Cock-spur Thorn	<i>Crataegus Crus-galli</i> .
Downy-leaved Thorn	<i>Crataegus tomentosa</i> .
June Berry	<i>Amelanchier Canadensis</i> .
Flowering Dog-wood	<i>Cornus florida</i> .
Sour Gum	<i>Nyssa multiflora</i> .

Blue Ash	<i>Fraxinus quadrangulata.</i>
Sassafras	<i>Sassafras officinale.</i>
Button-wood	<i>Platanus occidentalis.</i>
Hog-nut Hickory	<i>Carya porcina.</i>
White-heart Hickory	<i>Carya tomentosa</i>
Small-fruited Hickory	<i>Carya microcarpa</i> (Nutt).
Black Walnut	<i>Juglans nigra.</i>
Chestnut	<i>Castanea Americana.</i>
Swamp white Oak	<i>Quercus bicolor.</i>
Scarlet Oak	<i>Quercus coccinea.</i>
Swamp Oak	<i>Quercus palustris.</i>
Black Oak	<i>Quercus tinctoria.</i>

The coniferous trees are not often found in the peninsula. In the north of Ontario, as in Quebec, the sub-Arctic forest comes down to the water-parting of Hudson's Bay.

Forest Products

The provinces of Ontario and Quebec still supply the larger proportion of the total forest product of the Dominion, and immense areas of these forests at the north are practically untouched. The best of the more accessible wood on the main streams has been cut; pine is getting scarce and oak is all gone, but the hardwood forests of other species still remain, and the spruce at the north is without limit. The governments of both provinces are beginning to awake to the necessity of taking precautions against forest fires, and of making regulations to prevent the reckless waste which has gone on for many years. Ontario is leading the way in this respect, and the National Algonquin Park is not only a reservation of the primeval forest but a school of forestry. It is situated on the headwaters of the Madawaska, the Bonnechère, the Petewawa, and other streams draining into the Ottawa, and of the Muskoka flowing to Georgian Bay. Very little of the land is arable, but it is admirably

suited for the growth of trees. Land unsuited for agriculture is available for arboriculture, and under proper regulations the forest will reproduce itself. Forestry as a science is in its infancy in Canada; still it must not be supposed that the lumbermen denude any district they go over. They cut only the trees above a certain limit as to size, and leave the remainder to grow. Pine, however, does not succeed pine on the same land, nor oak succeed oak. There are some laws dominating the reproduction of forests which have not yet been worked out into a scientific system. The total forest product of the Dominion may be estimated by the exports, and these may be taken as three-fifths of the whole, the other two-fifths being consumed in the country.

The proportions of the forest products of the Dominion, still harvested in the provinces of Ontario and Quebec, appear by the following table, showing the percentage of the forest products of each province of the Dominion relatively to the total product for the census year 1890 taken as 100 :—

	per cent
Ontario	40·22
Quebec	32·92
New Brunswick	7·75
Nova Scotia	8·40
P. E. Island	2·35
Manitoba	2·12
British Columbia	4·57
Territories	1·67
	<hr/>
	100·00

This includes not only lumber proper, but laths, shingles, pulpwood, and tan-bark.

The whole subject requires careful examination by impartial scientific experts, for the wildest statements have been made concerning the exhaustion of the forests

and the ratio of their reproduction. These statements range from the gloomiest pessimism to the most extravagant optimism, and all with figures behind them running into many thousands of millions where in one item alone an error in transcription of official figures might change two millions into twenty millions, and form the basis of an argument or an authoritative statement.

Hudson's Bay Watershed

Many differences of opinion exist as to the resources of the territory belonging to Ontario and to belong to Quebec across the water-parting of Hudson's Bay. The parting is low ; for at high water Summit Lake discharges both north and south—into Lake Abitibi and into Lake Temiscamingue. The main facts seem to be that no white pine is met further north than six miles below Lake Abitibi, and while there is abundance of spruce, poplar, and birch northwards to the bay, only the spruce is large. At Moose river the spruce is 15 inches in diameter, and the balsam and poplar is of fair size ; but there, and all round the shore of James Bay, the trees, while quite suitable for building, do not grow to any great size. As for agriculture, there are gardens at all the Hudson's Bay posts in the territory in question, and potatoes and many other vegetables are grown, but melons, cucumbers, and tomatoes will not ripen, nor will wheat. Cattle are kept in considerable numbers, and feed on the native grass and the hay cut on the meadows. At the post on the East Main river there were fifty head of cattle in 1890. When the province of Quebec is enlarged as contemplated, that river will be its extreme northern limit. It is just beyond latitude 52°, and that is also the extreme northern limit of the province of Ontario on the bay.

CHAPTER X

QUEBEC—THE ANCIENT PROVINCE

History

CANADA, in the restricted sense of the word denoting New France, represented now by the two St. Lawrence provinces, was discovered by Jacques Cartier, in 1534, for Francis I. of France. He was the first who is recorded to have entered the Gulf of St. Lawrence, and was the discoverer of all the lands bordering on or contained within it. What transpired upon the ocean-coast between that date and the discovery of America has already been discussed in the chapter on Acadia. On his first voyage Cartier went no further than Gaspé. On his second voyage, in 1535, he went up the River St. Lawrence as far as Hochelaga, the site of the present Montreal; he wintered on the St. Charles river, close to the present city of Quebec, and returned to France on the opening of spring. In 1540 Francis I. created François de la Rocque, Sieur de Roberval, his viceroy and lieutenant-general in New France, with many other high titles, and Roberval sent out Cartier in the following year, with five ships, as his lieutenant, intending to follow with the main body of settlers. Cartier built a fort at or near Cape Rouge, a few miles above Quebec, but Roberval did not sail as arranged, and Cartier having sent two ships back to France wintered

again in Canada in 1541-42. Little has been found concerning the events of that winter. He named his fort Charlesbourg Royal, and he would seem to have again visited Hochelaga. On the return of spring he sailed with all his people for France; and, having put into the harbour of St. John's, Newfoundland, on his way home, he found Roberval there with his belated expedition on the way to New France, but having apparently had enough of the country Cartier sailed during the night for home. Roberval continued on his way, and on arriving at Cartier's fort, he enlarged it and changed its name to France Roy. He is reported to have explored the Saguenay, and to have gone up the St. Lawrence at least as far as Hochelaga. Little has remained to record his doings. He passed one winter in Canada, and, in the fragmentary records which survive, it would appear that Cartier was sent out to bring him and the remains of his party back to France. It is, however, certain that both were back in 1544, and from that time no attempt to found a colony was made until 1608.

Although Canada was forgotten by the king and the great noblemen, it does not follow that Cartier's discoveries were not utilised by the merchants and sailors of France. The gulf and river were, during the years of apparent neglect, favourite resorts of the Basque whalers; and there are indications of traders having been not only upon the coasts, but far up the river, although no explicit narrations have been preserved of such voyages. Thus it happens that with Champlain and Lescarbot commence the first definite records of the History of Canada. Tadoussac was the chief place of resort in those early days, and merchants of St. Malo were trading there for furs in 1600, when Canadian history properly begins. Champlain made a voyage as far as Hochelaga in 1603, before he went to Acadia. The merchants of St. Malo and Rouen were then

conducting the fur trade in the river, either individually or by a company of partners, like the North-west Company of 200 years later. The Canadian annals commence with such a company, of which De Monts was the head. After his experiment in Acadia he decided on making a settlement at Quebec, and in 1608 he sent out Champlain as his lieutenant to found the settlement, and Pontgravé to carry on the fur trade.

Quebec was thus a creation of the fur trade. Many of the members of the company were Huguenots, Pontgravé, Chauvin, and De Monts among them ; and although Champlain was a Catholic, and always took a deep interest in the conversion of the savages, the merchants cared very little about such matters, being anxious rather for good returns in furs. Protestant and Catholic chaplains accompanied the earlier expeditions, but their polemics scandalised the sailors, and gave little promise of success in converting the Indians. So it came about very soon that only Catholics were allowed to settle permanently in the country.

There has been in Canada no dearth of remarkable men, but of all who have left their traces upon her history none have been endowed with a character so noble, so brave, so loyal, so persevering, as Samuel Champlain. The amiability and grace of the French character was combined with the sturdier elements requisite in a pioneer leader. He was as much at home smoking the calumet in the wigwam of a sachem on the upper Ottawa as he was in Paris at the court of his patron Henry IV. His cheerfulness never failed him, nor did his faith in his adopted country ever waver. He was patient and kindly without being weak, and religious without being intolerant. It is not the least among the privileges of Canada that her history opens with a personality so sane and so sweet as

still to remain a type and ideal to shine as the guiding star of successive generations of her children.

In 1608, then, Quebec was founded. The first "abitation" was in the lower town, on the site of the present market; but soon after a fort was built on the cliff above, on the site of Dufferin Terrace, not far from the Hotel Frontenac. Champlain allowed Pontgravé to attend to the fur business of the company, and he set himself to establish a colony for France, and extend discovery to the West, if haply that much-desired passage to the South Sea might only be found. There is not space here to recount the trials of the little settlement—how its founder laboured in the colony; how he pleaded its cause among the great in France; with what tact he conciliated the jarring interests of the merchants of Rouen, St. Malo, and La Rochelle; and, after the English broke up his colony and carried him away a prisoner, with what patient courage he picked up the broken threads of the enterprise, and, after the peace, commenced his work anew.

Champlain has been blamed for having entered into an alliance with the Algonquin tribes, and having thus incurred the deadly hostility of the powerful Iroquois nation. In reality he had of necessity to cast in his lot with the tribes surrounding his colony. In a conflict so deadly there could be no neutrals. The Neutral nation in Southern Ontario adopted the very policy which Champlain is blamed for not following, and, after the Hurons were crushed, the Iroquois exterminated them with so ruthless a destruction that their very name disappeared in blood and fire.

Slowly and painfully the little colony grew, and was with difficulty maintaining itself against the Iroquois who, after the assassination of Piskaret, the great war-

chief of the Algonquins, raged up to the very palisades of the fort, when in 1641 there arrived at the little settlement a party of forty men from France, headed by a soldier, or rather a crusader, of commanding and grave aspect—a man who really believed in something, and such persons are always to be taken seriously. With him came Mademoiselle Jeanne Mance and three women companions, two of them wives of soldiers. Such an acquisition to the strength of the colony was indeed welcome.

Now, writing in this nineteenth century—almost at its close—it behoves one to be circumspect, lest in any way he betray weakness for antiquated ideas of the supernatural. Are they not visions, dreams, figments of exalted religious enthusiasm without objective reality? Possibly; but the present object is not to discuss them, but merely to direct attention to the fact that out of such visions and dreams has been woven the objective reality of the beautiful city of Montreal. These people had not come so far to dwell under the protection of the fort at Quebec; would not, in fact, stay there, but would go when the spring opened to the island of Montreal—that fair but fiend-haunted wilderness infested by devils incarnate in Iroquois war-parties.

It came about in this way; a devout priest (Jean Jacques Olier) and a devout receiver of taxes (Jérôme le Royer de la Dauversière), strangers to each other, and living in different cities, each received a divine mission, concerning the reality of which they had no shadow of doubt, so clearly was it marked by miraculous signs, to found an order of priests to preach and minister, an order of nuns to nurse the sick, and an order of nuns to teach—on the island of Montreal and nowhere else upon the habitable globe. They knew nothing of Canadian geography, but

this place they saw in a vision. They met by accident, and each read instantly the other's secret. There is not space to dwell upon these singular occurrences. Those who are able to receive them may read about them in other books, and those who cannot receive them will not care to hear. Suffice it to say, that these two persons, under the inspiration of these and many other such influences, organised a company—the society of Notre Dame de Montreal—obtained a grant *en seigneurie* of the island of Montreal, and Paul de Chomedey—Sieur de Maisonneuve—a soldier of experience in war, had come out to take possession. In vain did the governor of Quebec set forth the danger of their rash undertaking. Maisonneuve replied simply, “It is my duty and my honour to found a colony at Montreal, and I would go if every tree were an Iroquois.” So on May 18, 1642, Montreal was founded, and mass was said on the site of the present Custom-house. All the dreams of its founders came to pass, and remain visible to this day. The seminary of St. Sulpice, founded by Olier, still preaches and ministers in the great parish church of Notre Dame; the successors of Jeanne Mance still nurse the sick at the great Hotel Dieu; and the sister Marguerite Bourgeoys who came shortly after to join them, still teaches the faith of the Roman Catholic church by the mouths of more than a thousand of her successors, not only in the beautiful pile of buildings on the slope of Mount Royal, but in over a hundred establishments to more than 20,000 children throughout the Dominion, and in many cities in the United States. Francis Parkman, a scholar trained in the clear and dry light of Boston culture, asks, “Is this true history or a romance of Christian chivalry?” and answers, “It is both.”

With such a beginning, romance could not fail to

abound in the history of Montreal, and on it fell the brunt of the Iroquois fury. Deeds of devotion and even of self-immolation recur constantly in the history of this little colony, and the halo of a deed worthy of Thermopylæ lingers round the rapids near Carillon on the Ottawa.

The time came, however, when the growing strength of New France not only made head against the Iroquois, but sought them out in their forest recesses, and destroyed their towns. A life of incessant peril developed a rare succession of partisan leaders and Indian fighters who beat the Indians in their proper methods of war. The young men would leave the restrained life of the settlements to follow the wild freedom of Indian life in the forests. In vain were laws enacted against these "coureurs de bois," as they were called; the more adventurous youth found the temptation too strong, and indeed they were of use to the colony. They spread the influence of France to the remotest tribes of the west; they assisted as interpreters, and became the pioneer fur-traders, and they kept the governor informed of every stir on the remotest borders; many married Indian wives and bound the tribes to the French interest. The Count de Frontenac was the leading figure among the governors of those days, and from 1672 to 1698 upheld the prestige of France in the New World. Under his guidance New France passed from the status of a chain of trading and mission posts to that of an organised political community. Although the colony was small, great issues were raised and contended for the mastery. Frontenac represented Louis XIV., and Bishop Laval, the first Bishop of Quebec, represented, fully and worthily, the Church. They were both very able men and embodied types of two oft-conflicting forces in society. The history of Canada in their day is full of interesting disputes, recalling some-

times the times of Pope Gregory VII., and sometimes the "Auchterarder case." The "officialité" of the Bishop and the tribunal of the King's representative were not always in accord, and *appels comme d'abus* disturbed the little society on the St. Lawrence as well as the great world of Paris. Neither the bishop nor governor were endowed with yielding natures, and Frontenac was recalled after the court was wearied with their disputes; but in seven years the colony sank so low he had to be sent back to save its falling fortunes. On his return he adopted an actively offensive system of defending the colony. He inaugurated what was called "la petite guerre," to check the advance of the English colonies at the south by harassing them with incursions of Canadian militia and of Indians led by daring and skilful partisan commanders. Such an expedition it was which took Schenectady in a bitter night in February 1690, and massacred many of the inhabitants in their beds, and carried off the rest as prisoners. Another, under Hertel de Rouville, destroyed the village of Salmon Falls, and another harried the town of Casco in Maine. Deerfield in Connecticut, Haverhill in Massachusetts, and other towns were destroyed; generally fired at night and in the winter, by parties of French and Indians on snow-shoes. In this way the frontier settlements of the far more populous English colonies were kept in a constant state of alarm. The captives, mostly women and children, were compelled to march to Canada in the swift retreats of the invaders, and the Indians would kill any who could not keep up.

Some really brilliant commanders were produced among the French colonists. All the family of Le Moyne distinguished themselves, but chiefly Le Moyne d'Iberville. He it was who repeatedly conquered

Hudson's Bay and Newfoundland, and kept the Atlantic sea-board in terror. He was a captain in the service of the king, and commanded squadrons in the royal navy.

In the meantime great discoveries were being made in the far west. There was no more daring explorer than Champlain himself. He discovered the lake which bears his name. He went up the Ottawa to the river Mattawa and crossed the portage to Lake Nipissing. He went down French river to Georgian Bay in Lake Huron and remained a winter just south of the Muskoka country north of Toronto. He went on a war party through Lake Simcoe and down the Trent to Lake Ontario at the Bay of Quinté and crossed the lake to attack the Iroquois towns in western New York. Nicolet had been sent by him among the Indians to learn their language, and this young and enterprising explorer was able to tell Champlain the year before his death of the Sault Ste. Marie and Lake Michigan. Then came the Iroquois onslaughts. The Huron missions were extinguished in blood, and all the nations of the peninsula were exterminated. The trails were deserted and overgrown. The lurid glare of the flaming towns died down to blood-soaked cinders, and the upper country was closed for many years. In 1663 the régime of the trading companies ended, and under the royal government, succour was sent to the failing colony and discovery recommenced. Talon, the ablest intendant ever in New France, encouraged exploration. In 1660, Groseilliers and Radisson were on Lake Nepigon, and in 1671 Father Albanel was on his way to Hudson's Bay by Lake St. John and Lake Mistassini. In 1665 Lake Superior was explored in all its extent, and in 1669 Jolliet and Dollier de Casson were on Lake Erie; for up to that time all exploration had gone by the Ottawa. In 1673 Father Marquette and Louis Jolliet reached the

Mississippi by way of Fox river and the Wisconsin, and paddled down as far as the Arkansas, returning by the Des Plaines and Chicago portage. The same year Fort Frontenac was founded on its present site at Kingston. Then La Salle leased the fort as a centre for western discovery and trade. In 1679 he built the *Griffon* at Cayuga creek on the Niagara river, above the falls, and the pioneer lake craft sailed to the site of Michillimackinac. He went by the St. Joseph and Kankakee rivers to the Illinois, and from that year to 1682, Hennepin, Duluth, and La Salle visited all the region of the upper Mississippi. In the latter year La Salle followed that great river down to its mouth. As the colony gained strength the Canadians pushed westwards farther and farther. They founded Detroit and St. Louis and their forts reached to Hudson's Bay. They pushed across the Winnipeg watershed, and founded posts on Lake Winnipeg and the Saskatchewan as far as the Rocky Mountains. All these enterprises emanated from Quebec and Montreal; but the latter city was the centre of the fur trade, and when the narrow streets were filled with *voyageurs* on the arrival of the brigades of canoes with furs, and when the savage allies of the French camped in the meadows near the town, it required all the efforts of the good priests, the *seigneurs* of the island, to keep the people in anything like a tolerably religious frame of mind.

Meanwhile the English colonies at the south were increasing very rapidly, but they had no cohesion. The wars of the New England border, and of the back settlements of New York, never disturbed the Virginians; nor were the New Englanders ever concerned when the frontiers of Virginia were swept with fire and axe. The Canadian French were, by the very fact of that centralisation which was their political weakness, better organised

for war, because their leaders could act with decision and promptness. Town meetings of citizens are useful for making speeches, not for making campaigns ; while the military spirit of the French rose high. The expedition under Sir William Phips to take Quebec in 1690 was repulsed, and in 1691 a strong expedition from New York, under Schuyler, was defeated near Montreal. The French had no difficulty in maintaining their position, and even carried on an aggressive policy. There was never lack of bold and skilful leaders among them. It was a native-born Montrealer who settled the mouth of the Mississippi, and another founded the city of Mobile. As the great struggle for supremacy approached, the French established a chain of forts from Canada down the Mississippi valley, and on all the portages leading to its tributaries north of the Ohio.

The history of Canada in those days is full of incident and interest. The exertions and successes of this handful of people in the north against the stronger English colonies at the south are a surprise to the student of history. The Seven Years' War, which broke out in 1755, was undertaken by the English almost solely on behalf of the colonies, now the United States ; and twenty years later they turned against the Mother Country, which had saved them by her ships and troops from the far-reaching enterprises of the French from Canada, and placed them in a position of permanent security, at the cost of an increase to the national debt of sixty-four millions of pounds sterling. The struggle was, however, inevitable, and the decaying monarchy of France could not abide the shock. The luxury and extravagance of the horde of speculators which crowded round the intendant Bigot and acted as his jackals, plundered the king and oppressed the people with impartial rascality. It

was one of his creatures, Vergor, who surrendered Beauséjour, and who had charge of the post on the heights at Quebec which Wolfe's troops surprised in the night. One sentence in a letter from Bigot to his protégé when he sent him to Beauséjour tersely expresses the cause of the collapse of the French power in America. "Profit, my dear Vergor, by your position: clip and pare, you have every facility, and soon you will be able to join me in France and buy an estate near me." The English language possesses in its copious treasury no legitimate word to set forth this intensity of decaying public honour, and the low word "boodle" must be used to express that debased ideal of politics which, with the cynicism of Mephistopheles, took the heart out of a people and dropped from the height of Champlain, Maisonneuve, and Daulac, to the coward and sluggard who surrendered Beauséjour and lost the heights of Quebec.

It was in June 1755 that war was declared; but there had been hostilities on the Ohio for a year preceding, and Washington had fired upon a party of Canadians on May 28, 1754, and killed their leader, Jumonville. The French were very indignant, and their histories still apply hard names to the occurrence; but, while it is not necessary to go into this still burning question, it is interesting to note that Washington fired the first shot of the war. On 3rd July he capitulated to a party of Canadians, and for the rest of the year the French held the whole valley.

In 1755 war was formally declared, and the final struggle began. The French, though inferior in numbers and resources, and with very little aid from France, won the first honours. In July, De Beaujeu, with 140 Canadian militiamen, 60 regulars, and 600 Indians, attacked and defeated General Braddock on the Monongahela. It was

a terrible defeat, and had it not been for Washington and his Virginians, who covered the retreat, scarcely a man of the English army would have escaped alive. All the horses, equipment, cannon and baggage of an army of 2000 men were captured, together with the military chest of £25,000. One thousand soldiers were killed, including the general and most of the officers. In the same year Johnson, with colonial troops, defeated Baron Dieskau near Lake George. In 1756 the Marquis de Montcalm arrived in Canada—a soldier whose skill and experience retarded for a few years the fall of the French power. He defeated the English at Oswego, and captured the place, and he invaded the colony of New York by way of Lake Champlain, and captured Fort William Henry at the head of Lake George. The massacre of the garrison by the Indians which occurred there, although against his commands, has been ever since a blot upon his reputation. In 1758, at Ticonderoga, he defeated Abercrombie and an army of 14,000 men, and although the English were successful in some minor engagements, the results of the first three years of the war were disastrous to the English arms.

With the appointment as commander-in-chief of General Amherst in 1758, the fortune of war changed. Amherst did not himself display commanding military genius, but he had with him a number of very capable officers, and, chief among them, Major-General James Wolfe, who led the attack on Louisbourg, and captured it after a brave defence. The following year the armies of England began to close in round the hitherto victorious French in Canada, and Montcalm drew in his garrisons for a final stand. It was the end of June before the fleet, under Admiral Saunders, having on board General Wolfe's army, arrived at Quebec, and for more than two months

the town was bombarded, and several unsuccessful attempts were made upon Montcalm's position. At last Wolfe withdrew most of his troops from the north shore, crossed to Point Lévis on the south shore, and began to march up the river, watched by the French from the opposite heights. On the night of the 12th of September, concealed by the darkness, he dropped down the river and effected a landing at a place still known as Wolfe's Cove, and by daybreak his whole army was drawn up on the heights of Quebec.

It is unnecessary to recount in this short sketch the events which succeeded. The details of the battle are well known—the success of the English arms, the heroic death of Wolfe at the moment of victory, and the equally heroic death of the chivalrous Montcalm in the hour of defeat. A single shaft in a conspicuous position in the upper city was erected, when the Earl of Dalhousie was governor, to the memory of both, and the inscription tersely sums up the result :

MORTEM. VIRTUS. COMMUNEM
FAMAM. HISTORIA
MONUMENTUM. POSTERITAS.
DEDIT.

In Canada, to this day, it is debated whether Montcalm exercised good judgment in accepting battle, seeing that at the approach of winter Wolfe and the fleet would have been compelled to abandon the enterprise. He is blamed for detaching De Lévis, his best officer, and thus weakening his force. To this it may be replied that the defences of the town were destroyed by the bombardment, and that it was in no position to resist attack from the land side, that his force was still superior in numbers to Wolfe's, and that his object was not to give Wolfe time to establish himself. Montcalm was a soldier of great

experience and ability, and doubtless knew all the circumstances better than the critics of to-day.

The fleet sailed away and left General James Murray with a strong garrison in the ruined city, and for the whole winter he was in turn besieged by the active De Lévis who kept the field with troops from Montreal. He was tempted out to meet De Lévis in a battle on the Ste. Foye road, and was defeated, but he held out until the returning spring brought the fleet again with much-needed reinforcements, and a combined movement of all the English armies was made on Montreal. Amherst assembled his troops at Albany and marched to Oswego on Lake Ontario, from whence he moved down the river in a large flotilla collected there in advance,—a perilous passage enough, seeing that he had to run all the rapids with an army of 10,000 men. Colonel Haviland moved down the valley of the Richelieu, the usual route of invasion, and General Murray marched up from Quebec. Amherst disembarked at Lachine, and united his forces on the plateau west of the town. Resistance to such a force was useless, and the French governor, the Marquis de Vaudreuil, capitulated and surrendered to General Amherst the whole of Canada in its utmost extent.

Thus closed the history of the French monarchy in Canada, and opened the history of the United States of America.

The terms of the capitulation were generous, and the treaty of cession confirmed them. After a period of uncertainty the state of the country was settled by a measure called "the Quebec Act," passed by parliament in 1774. That statute confirmed the Canadians in the enjoyment of their religion and their civil laws. The feudal tenure of the land was continued. The religious communities were unmolested, and the Roman Catholic religion received

a quasi-establishment under which it collects tithes from its own people to this day. The Jesuits were not allowed to continue their institution, and about the same time the Jesuit order was suppressed in Europe by Pope Clement XIV. While the members of the order were expelled from all Catholic countries, it is the fact that those who remained in Canada enjoyed their estates under English rule, until the last one died, when the property was taken by Government for the support of education.

Scarcely was the treaty of cession concluded when Pontiac's war broke out, and the whole western border was desolated by fire and axe. It was a deep-laid conspiracy of the western tribes, and all the forts of the frontier but one fell—the most of them by strategem. Detroit alone held out. After Pontiac's defeat the fur trade opened up again, and the English from Montreal entered into it with vigour; but the West remained uneasy until after the murder of the great war-chief of the Ottawas by an Indian enemy.

At the conclusion of peace in 1763 nearly all the leaders of Canadian society had emigrated to France, even those who, like the Marquis of Vaudreuil, were Canadian born. Nearly all of the class designated by the name "noblesse" left. The parochial clergy remained—the clergy of the seminaries of Quebec and of St. Sulpice at Montreal also remained, and, round this body of faithful clergy, the abandoned and discouraged remnant of some 65,000 to 70,000 French Canadians clustered, and by their ministrations and wise counsel the national fire was kept alive. The Canadian people indeed needed support; for the English came in from the southern colonies as to a conquered country, and, although under 400 in all, claimed to be alone entitled to political rights, to serve on juries, or have a voice in public matters. They

supposed the penal laws against Roman Catholics were introduced into Canada, and one little knot of grand jurymen even presented the whole native population as papists, and, in the jargon of the period, declared that to permit Roman Catholics to serve on juries, or to hold positions of trust, was "an open violation of our most sacred laws and liberties." In the meantime, in the southern colonies, the seeds of disaffection were being fanned into flame, for the restraining fear of France on the north was at last removed.

The Canadians call this period *le temps de malaise*, but out of it was born in 1774 a measure so just, so wise, so fraught with all that is noble and generous in statesmanship, that it attached at one stroke the affections of the whole French Canadian people to the throne of Great Britain. This measure—the Quebec Act—granted, as above stated, to the Canadians their religion, not only its toleration but its freest exercise, their civil laws, their civil rights, their institutions and their lands; and the amazed people found themselves in a position, civilly, religiously, and socially, vastly superior to that they had been accustomed to under their old monarchs.

The Quebec Act was received with violent indignation by the disappointed little band of English in Quebec, and it raised a storm of invective among the revolutionary leaders at the south, who made it a count in the indictment of the Declaration of Independence; but it was an impregnable wall of defence to the Canadians, and to its justice is due the fact that Canada is still British. At the outbreak of the Revolution the armies of the Continental Congress invaded Canada, occupied Montreal, and besieged Quebec. The investing force was about 3000 men under Montgomery and Arnold, and General Carleton had as a garrison only one company of troops with

the seamen and mariners of a sloop of war and the inhabitants of the town—not exceeding 1000 in all. Montgomery fell in the assault on the night of December 31, 1775, and the siege lagged all through the long winter of 1775-6, to be abandoned at the opening of spring.

In the meantime the Continental Congress was vainly exercising its blandishments upon the French Canadians, and endeavouring to show them under what fearful oppression they were unconsciously groaning. Three commissioners were sent to Montreal. Among them were the astute Benjamin Franklin and Charles Carroll of Carrollton. The latter was a Roman Catholic, and he brought with him his brother, a Jesuit priest, to assist in moving the French clergy. Many interviews were held at the Château de Ramesay in Montreal, but the French were politely immovable. The fact was that the Continental Congress of 1774 had a great literary faculty for composing addresses, and they prepared three—one for circulation in England, where there existed a strong Protestant prejudice against Catholic emancipation; one for circulation in the English colonies, where the Quebec Act was intensely unpopular; and the third for circulation among the French Catholic people of the province of Quebec itself. These appear in the proceedings of Congress, and a sentence or two from each in juxtaposition will explain the present position of French Canada fully, without any added comment. It is no wonder that even the ready and plausible Franklin, who, a few years later, was to outwit the diplomats of England and France, was nonplussed by the production of these three masterpieces of political rhetoric, each so cogent and persuasive to the sufferers for whom it was prepared. At the present date the error of letting them all out at once would be patent, for the press telegrams would publish

them ; but communications in those days were much more difficult. One remark alone suggests itself in this connection, the simple historic statement that, alone among the colonies of the New World, Canada stands proudly pre-eminent, inasmuch as not one spot of blood shed in the name of religion sullies the white pages of her annals. The only persecutors in Canada were the Iroquois savages, and the only victims were Roman missionaries.

Extract from the Address of October 21, 1774, to the people of Great Britain

“Nor can we suppress our astonishment that a British Parliament should ever consent to establish in that country (Canada) a religion that has deluged your island with blood and dispersed impiety, bigotry, persecution, murder, and rebellion, through every part of the world.”

Extract from the Address to the people of the English Colonies, October 21, 1774

“In the session of Parliament an Act was passed for changing the government of Quebec, by which act the Roman Catholic religion, instead of being tolerated as stipulated by the treaty of peace, is established, and the people there are deprived of a right to an Assembly. Trials by jury and the English laws in civil cases are abolished, and instead thereof the French laws were established.”

Extract from the Address to the Canadian People, October 26, 1774

“And what is offered you by the late act of Parliament ? Liberty of conscience in your religion ? No. God gave it to you, and the temporal powers with which you have

been and are connected firmly stipulated for your enjoyment of it. . . . We are too well acquainted with the liberality of sentiment which distinguishes your nation to imagine that difference of religion will prejudice you against a hearty amity with us. You know that the transcendent nature of freedom elevates those who unite in her cause above all such low-minded infirmities."

These three addresses were drafted by a committee, and adopted clause by clause in full session of Congress, two of them on October 21, and the third on October 26, 1774. They are very long, and the contents of the rest may be readily guessed. Their importance in this connection is to account for the fact that in all the extensive dominions of the Queen of the British Empire she has no more loyal subjects than the French people of Canada, and to show that this fact is mainly due to an act of generosity, justice, and kindness granted to a people in the deep discouragement of betrayal and abandonment by their own proper leaders.

With this the history of French Canada may be closed. Under the British Government the people by degrees advanced towards the full development of British political institutions. Only once since 1774 has the soil of the French province been invaded, and then, at the battle of Chateauguay in 1813, it was by a French commander with an army consisting solely of French militia that the enemy were defeated. It is on record in a *Precis*, printed in 1826, by order of the Duke of Wellington, privately for official use, and published many years after, that "not a single Lower Canadian militiaman was known to desert to the enemy during the three years of the war of 1812-14."

In later years 1837-8 a small minority in the neighbourhood of Montreal, dissatisfied with the slow progress of political reform, took up arms against the British Government, but some of the leaders were English, and there was a similar attempt in Upper Canada where the whole population was English. Both movements were promptly suppressed, and the desired changes came about in natural course at the introduction of responsible government.

NOTE TO CHAPTER X

The chief works of reference for the subject of this chapter have been noted at the end of Chapter III. The disputes between Bishop Laval and the Count de Frontenac may be followed in detail in *Le Comte de Frontenac* par Henri Lorin, Paris, 1895, and in *La Vie de Mgr. Laval* par l'Abbé Gosselin, Quebec, 1890-91. The most complete work on the Jesuits in Canada is *Les Jesuites de la Nouvelle France au XVII^{me} Siècle* par la Père Camillo de Rochemonteix, 3 vols., Paris, 1895. The literature concerning this period is extensive, but it is nearly all in French, and excepting by Francis Parkman, has been little studied by English writers.

CHAPTER XI

THE PROVINCE OF QUEBEC

THIS province is entitled to consideration and special study as the pivot province of the Dominion. No matter how the population of the provinces may wax or wane, Quebec, by the fundamental law, must always have sixty-five members in the House of Commons. The representation of the other provinces is regulated at each census by the proportion which their population bears to that of the province of Quebec, so that, the delegation from Quebec remaining always the same, the others are adjusted to it. This indicates some peculiar circumstances connected with Quebec requiring a special safeguard, and it is found in the fact that eighty per cent of its inhabitants speak French as their mother tongue. Quebec, moreover, demands the attention of the student because it is the germ of Canada. From the narrow shore under the cliff of Cape Diamond went forth the initial force which penetrated the wilderness from Hudson's Bay to the Ohio, and from Labrador to the Saskatchewan. Somewhere on that cliff, unmarked and unknown, is the grave of Samuel Champlain, the founder of New France—one of the noblest, bravest, gentlest men who ever sailed on the ocean or trod a forest trail; for

PARTS OF QUEBEC AND ONTARIO.

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ocean and forest were familiar to him. He was the type of a class of men common in the France of that period.

Boundaries

The province of Quebec is bounded on the south by the international boundary, by part of the province of New Brunswick, and by Bay Chaleur. On the east it fronts upon the Gulf of St. Lawrence, and it includes Anticosti and the whole group of the Magdalens; on the mainland the Canadian Labrador is separated from the Newfoundland Labrador by a line drawn due north from Blanc Sablon Bay to the 52nd degree of latitude. East of Blanc Sablon the coast is under the jurisdiction of Newfoundland, but how far inland that jurisdiction extends has not been determined. The western boundary separating Quebec from Ontario extends from the head of Lake Temiscaming northwards to the water-parting of Hudson's Bay and southwards through the centre of the same lake. Thence it follows down through the middle of the Ottawa river to Point Fortune at the head of the Lake of Two Mountains, from whence it strikes across the country to the river St. Lawrence at Point au Baudet. The triangular territory between the two rivers thus attached to Quebec consists of certain seigniories granted under the feudal tenure by the French crown. West of that the country was unsettled and was set off in 1791 to form a province under English laws.

The northern boundary of the old province of Quebec, which included also the present province of Ontario, was, until recently, taken to be the height of land, or water-parting, between the Hudson's Bay and St. Lawrence basins, and so it was always laid down on the maps. But difficulties arose about the boundary of Ontario and Manitoba, and a commission appointed to arbitrate ran

the boundary of Ontario north to James Bay, which boundaries, so far as Ontario is concerned, were confirmed by Act of Parliament. The boundaries of Quebec, however, remained in *statu quo ante*, and the north lines at the extreme east and west, to wit, the due north line from Blanc Sablon to latitude 52° , and the due north line from the head of Lake Temiscaming have not been produced beyond the height of land by any definite legislation. An Order in Council was passed in 1895, and it has been accepted by the province, to continue the western boundary from Lake Temiscaming to James Bay. The northern boundary specified in the order follows the East Main river from its mouth to the north point of Lake Patamisk. From thence it follows the parallel of latitude (about $52^{\circ} 55'$) eastwards to the head waters of the Hamilton river, which it follows to the boundary of the coast strip of the Newfoundland Labrador. As this proposition was made by the Dominion and accepted by the province, the required statutory enactment will follow in time.

Area

The province of Quebec extends, then, from Blanc Sablon, a fishing harbour at the inner end of the Strait of Belle-isle, in longitude $59^{\circ} 7'$ west, to Lake Temiscaming, in longitude $79^{\circ} 40'$ west, a distance of about 1350 miles. The width of the province, when measured to the height of land at the north, is very variable. Its extreme width along a line between 71° and 72° is about 500 miles, and its average width may be taken as 250 miles. The superficial area of the province is 228,000 square miles. When the boundary is finally enacted to extend to the limit of the Order in Council, it will add about 116,000

square miles to the territory of the province. The general lie of the province is N.E. and S.W., in the direction of its great feature, the river. In a general way the province is the hydrographical basin of the river as far as the intersection of the parallel of 45° north latitude; and the river being, as before stated, a northern river flowing on the southern edge of its basin, only 50,000 square miles of the area of the province lies south of it.

Contour of the Land

South of the St. Lawrence the Appalachian chain, known in Vermont as the Green Mountains, crosses the border between Lakes Champlain and Memphremagog, and continues in a north-easterly direction to a point about 30 miles south of Quebec city. Thence it follows the general course of the river at a varying distance from the south shore, but nearly always in sight upon the horizon. The range is known under the general name of the Notre Dame Mountains. It comes out upon the shore near Metis, and continues along the river to form the tableland of Gaspé. To the south-east of this range is the rolling country of the Eastern Townships, and on the north-west is the level plain of the river St. Lawrence.

The Notre Dame Mountains are not, however, in the Eastern Townships, mountains in any strict sense of the word; for the Appalachian highlands, on passing the border, lose their height, and cross to the St. Lawrence as a succession of ridges. That portion of Quebec is not a rough mountainous country, but a rolling country containing a large amount of rich farming and pasture land. There are points in this range, however, where the hills rise to a considerable height. Sutton Mountain is 4000

feet high. The mountains on the west side of Lake Memphremagog, although themselves of intrusive rock, are in this range. The higher peaks on the lake are the Bear and Hawk Mountains, the Owl's Head (2500 feet), and Mount Elephantis. Orford Mountain, which is not far away, is the highest peak (2886 feet) among the mountains in that vicinity. The general elevation of the country is from 500 to 1000 feet above the sea. The lakes in this region are not numerous. Among them are Lake Metapedia 480 feet, Lake Temiscouata 467 feet, and Lake Memphremagog 756 feet above the sea. Lakes Aylmer (795 feet), St. Francis (890 feet), and Megantic (1092 feet) are the chief remaining lakes of this region.

After the Notre Dame Mountains come out upon the shore of the lower St. Lawrence they attain their highest elevation in the Shickshock Mountains, from Matane to St. Anne des Monts, a distance of about 65 miles. The range is from 4 to 9 miles wide, and the higher summits rise from 3000 to 4000 feet above the sea, or an average of 2000 feet above the tableland of Gaspé. This range is not a part of the watershed; for the streams rise in lower lands in rear of them, and cut their way through to the St. Lawrence in deep ravines. The central part of Gaspé Peninsula is, on an average, 3000 feet above the sea. Some peaks are 3700 feet high. The whole central area is a wilderness; and if there be any level or arable land there, it is unsuitable for cultivation, for the altitude exposes it to summer frosts. On the lower levels towards the Bay Chaleur the timber is good, and there is a belt, about 10 to 20 miles wide, of fertile farm lands along the shore of the bay between it and the mountains. On the St. Lawrence side there is no farm land. Small settlements of fishermen cluster in sheltered coves at the mouths of the rivers. The Gaspé Peninsula is separated

from the main province by the valley of the Metapedia river, which, taking its rise in Metapedia Lake, not far from the Metis on the St. Lawrence, falls into the Restigouche near the Bay Chaleur. The Intercolonial Railway follows this valley.

The valley of the river St. Lawrence is bounded on the north in its whole length by the Laurentian highlands or Laurentides. They are but a short distance from the shore at Blanc Sablon, and they follow all along the north shore of the gulf, the estuary, and the river St. Lawrence at varying distances, but never very far away, until at the Saguenay they come out upon the shore. From thence they follow the bank



Norman, Photo.

JUNCTION OF RESTIGOUCHE AND METAPEDIA.

of the river very closely to within 20 miles of the city of Quebec. There, at Cape Tourmente, opposite the lower end of the island of Orleans, they turn away from the river, but still follow its general course at a greater or less distance. At Montreal they are 30 miles away; and, nearly half way between Montreal and Ottawa city at Calumet, they strike the Ottawa river, and follow up its northern bank for about 100 miles, as far as Lake des Chats, where they cross the river into the province of Ontario.

The nature of the Laurentian country beyond the valley has been described at length in a previous chapter. The number of its lakes is past all counting, and, as the country is surveyed, more and more are laid down upon the maps. These are the sources of numbers of perennial streams, which flow down into the central valley in rapids and cascades, providing water power for the lower levels along a line of 1000 miles. In these days of ready transfer of power such an incalculable reserve of force may come to mean a great deal. In the meantime it is running to waste.

The Laurentian tableland to the north of the St. Lawrence valley is, as before stated, from 1000 to 1600 feet high, clothed with forest, and worn by the waste of countless ages into hills with rounded outlines. These rise in places into mountains. Cape Tourmente is 1919 feet high; Les Eboulements are 2547 feet high; and the mountains about the Saguenay are 1800 feet high. North of Montreal the highest point is Trembling Mountain 2380 feet, rising from the shore of Trembling Lake.

There remains now to notice only the central plain extending over an area of about 10,000 square miles in the province of Quebec. At the gateway stands the city of Quebec in a spacious amphitheatre formed by the

approach of both ranges. To the west the valley broadens, level and fertile, to Lake Ontario. The tide reaches to Three Rivers—half-way to Montreal, and nowhere in all the plain is the level higher than 300 feet above the sea, save in some isolated hills to be specially mentioned. Where the basin of the St. Lawrence touches that of the Hudson river on the south the water-parting is but 120 feet high. Lake Champlain itself is only 88 feet above the sea.

Across this central plain at distances varying from 15 to 25 miles, a line of completely detached hills, all, with one exception, of igneous rock, rise sharply out of the level fields. They are not very high—600 to 1000 feet above the plain, but they seem higher by contrast. The most northern is Rigaud mountain, at the head of the Lake of Two Mountains. Then follows Mont Calvaire of Laurentian gneiss, where the lake widens. Mount Royal is the next—the forest crown of the city of Montreal. Then follow successively, Montarville, Mont St. Hilaire (Belœil), Rougemont, Yamaska, Shefford and Brome mountains, until the intrusive masses of Lake Memphremagog are reached, which extend south beyond the border. Monnoir or Mount Johnson is a smaller conical peak to the west of the échelon. Any one standing on Mount Royal, above Montreal, may see on a clear day the Laurentides to the north, and to the south may follow this échelon of detached hills until it leads up to the southern range, where it crosses the border. The plain itself, as before stated, does not rise higher than 300 feet above the sea.

The Gulf of St. Lawrence

This great inland sea is closed in from the Atlantic by the whole length of the islands of Cape Breton and

Newfoundland. It washes the shores of four provinces—Quebec, Nova Scotia, New Brunswick and Prince Edward Island. It has three entrances—one far to the north, the Strait of Belle-isle; one at the south, the Strait of Canso; and in the centre the main entrance, Cabot Strait, between Cape Breton and Newfoundland. As if to lead up to the grand entrance, a channel over 200 fathoms deep extends from the outer ocean between the St. Pierre bank and the Banquereau. It enters the gulf with a breadth of 40 miles, and continues up the river between Gaspé and Anticosti as far as Bic. The gulf is deep to the very shores, and there are not many expanses of land-locked water presenting so few obstacles to navigation. The land is bold on both sides of the entrance.

The width of Cabot Strait, from Cape North to Cape Ray, is 60 miles. St. Paul's Island, off Cape North, narrows the distance to 40 miles. Cape North is 1100 feet, and the coast of Newfoundland at Cape Ray is 2000 feet high, so both sides of the gateway can be seen from the deck of a passing steamer.

The Gulf of St. Lawrence is 500 miles in its extreme length from north to south, and 243 miles across from Cabot Strait to Gaspé. Its area is over 80,000 square miles. Although the smooth water of the Gulf is sometimes spoken of, it is by no means smooth in a strong wind, even though it is sheltered from the long roll of the Atlantic. The islands it contains are easily recognised, and the gulf and river are lighted almost like a street. The water is deep and the soundings are well marked. On the other hand, the currents are variable, and much affected by the winds and tides. The current which has long been supposed to run in at the Strait of Belle-isle proves to be mainly a tidal current, although there is a preponderance of inward flow. The current of

discharge of the river runs near the south shore, and there is a steady current running out of Cabot Strait. Ships sailing inwards follow the northern shore to avoid the river current and obtain the assistance of the tidal stream, which mainly seeks the northern shore.

The navigable season extends from 15th April to the end of December. The lighthouses are extinguished from 10th December to 1st April. Throughout December ice forms in the bays, and though the gulf never freezes, the ice collects in floes with lanes more or less open. In March and April the sealing vessels go amongst the floating ice in pursuit of seals, and, even in May, field-ice, from the breaking up of the rivers in the interior, will sometimes gather, for a few days, in Cabot Strait, but it is rotten with the spring sun, and steamers can pass through. The navigation by the Strait of Belle-isle is open between 1st July and 1st December. In entering the gulf by Belle-isle allowance must be made for the exceptional variation of the compass, as it is 37° at Belle-isle, and only 17° at Quebec.

Besides Prince Edward Island, which has been separately treated, the only islands in the gulf are Anticosti and the Magdalen group. The long chain of the Labrador islands are not included, for they cluster close against the north shore. Anticosti and some of the Magdalens are alone seen in the direct course in or out by Cabot Strait.

The geography of the gulf is sometimes confused by counting the Magdalens as thirteen small islands. There is a large island, narrow, and concave to the east, about 35 miles long, stretching in the same general direction as the north-east coast, and consisting of what are called Amherst, Grindstone, Allright, Coffin, Grosse, and East Islands, but all these are connected by a double row of sandbars enclosing shallow lagoons. It is possible to

drive at low tide from one end to the other, for although there are occasional inlets across the bars, they can be forded. The land rises in hills from 200 to 580 feet high, consisting of red sandstone similar to that of Prince Edward Island, and containing large deposits of gypsum. There is abundance of grass for cattle and sheep, but very little agricultural land. The appearance of the island on a fine day is very pleasing—cliffs of red sandstone, hills of yellow sand, a mantle of bright green grass, and clumps of dark green spruce combining to form a contrast of colour. Entry Island is a red sandstone rock 580 feet high, three miles off the inner south-east point, and Deadman's Island is a trap rock, 170 feet high, 8 miles off the south-west point. It is like a pyramid when seen end on, but its broadside is like a body draped for burial. The funereal nomenclature of this group is heightened by the fact that the islands were granted to Admiral Coffin. Tom Moore's imagination was stirred, on passing Deadman's Island, into bringing the Phantom Ship into the gulf, and other poets have followed him—

To Deadman's Isle in the eye of the blast,
To Deadman's Isle she speeds her fast ;
By skeleton shapes her sails are furled,
And the hand that steers her is not of this world !

There are 4942 people on the Magdalen Islands—kindly people, for the most part French. They get their living by fishing and sealing, and they are never troubled with the Phantom Ship. The islands were known in the early times as *Les Isles Ramées* (the Ramea Island of Hakluyt).

Brion Island—so named by Jacques Cartier after his patron Philippe de Brion-Chabot, admiral of France under Francis I.—is 11 miles from the Great Magdalen.

It is 4 miles long and 200 feet high on the north side. The red and gray sandstone so common in the gulf is seen here also. The soil is good, and there are a few settlers on it. Not far away are the Greater and Lesser Bird Islets rising 105 feet from the sea, and white with sea fowl. It is not possible to land on the Bird Islands excepting in the calmest sea.

In the estuary of the river is Anticosti—an island 122 miles long and 30 wide, and 2600 square miles in area. The south coast is low and monotonous; but on the north there are cliffs of white limestone rising to a height of 700 feet. The only harbour is at Ellis Bay, and that has but three fathoms of water. The island is encircled by a dense belt of dwarf spruce. The land is fair, but the crops are exposed to summer frosts, and there is very little good timber upon it. There are salmon in the streams and cod in the waters around, wild ducks and geese frequent its bays and inlets, and it is a famous place for bears, as its name indicates—Naticostek, “the hunting ground of the bear.” The island has been purchased by M. Menier, the chocolate manufacturer of France, who is reported to be stocking it as a game preserve with wild creatures of all kinds, which had been hunted almost to extinction. The population permanently residing on the island was 253 in 1891.

The New Brunswick shore of the Gulf of St. Lawrence is uniformly low and wooded. The rivers empty into lagoons formed by bars and spits of sand; but there are no shoals or rocks. Shediac has a harbour of 18 feet water. There is also a good harbour at the mouth of the Richibucto. The Miramichi river is the chief place on this coast, and is a great shipping centre for lumber. The inner bay or estuary is 13 miles long by 8 miles

wide. There is a depth of 15 feet over the bar at low tide, the water is deeper inside, and any vessel which can cross the bar can go up as far as the forks of the river.

The north shore of the gulf is part of the Quebec Labrador, and will be described in that connection.

The River St. Lawrence

Much has been said of this stately river in a preceding chapter; but, in describing the province of Quebec, it is necessary to revert to it, and to it one must always revert in thinking of Canada; for nowhere is there such another river, with an estuary so bold, with portals so grand, with water so bright, with scenery embracing every element of nobility and picturesqueness, from the solemn gloom of the Saguenay to the sunny tangle of the Thousand Islands. Romantic memories cling to every islet and headland. Its broad waters were the highway to the great west, and opened up the continent to its very core. What the Nile was to the Egyptians, and more than the Rhine is to the Germans, this king among rivers is to the hearts of those born upon its banks.

The St. Lawrence is not like other great rivers which lose their identity in vast alluvial deltas where land and water are scarce discernible apart. Its banks are clear cut and sharp to the very ocean's rim, and, from the heart of the Atlantic, a broad and deep channel of 200 fathoms leads far up, as if to invite an entrance. Little need be said of the navigation of the river beyond the fact that, among the very few ports with sufficient depth of water to receive the *Great Eastern*, Quebec was one. Above Quebec the average width is two miles, and there

the energy of the Canadians has so improved the natural channel that the largest ocean steamer which can cross the bar of New York harbour can steam up to the wharfs of Montreal at the foot of the rapids of Lachine. The St. Lawrence is, as Charlevoix well said, the most navigable of rivers. The strong tides assist vessels in entering or departing when the wind is contrary, for the winds are apt to blow directly up or down the river, being drawn by the highlands on both sides. At Quebec the spring tides rise $18\frac{1}{2}$ feet, so that it seems less a river than an arm of the sea. At Rivière du Sud it is 13 miles wide, at the Saguenay it is 20 miles, at Matane 30 miles, at Seven Islands 81 miles. Only 21 miles below Quebec the water is brackish and unfit to drink, and at Kamouraska it is quite salt. In many of the old books and maps the St. Lawrence is called the River Hochelaga, and sometimes the Grand river of Canada.

At Point de Monts a stranger first realises that he is in a river, for both sides become visible. The St. Lawrence is 40 miles across at that point and very deep. On the north shore the coast is low and sandy; but 40 miles farther up it rises in places to 1000 feet and continues high to the mouth of the Manicouagan river, where the mountains again recede. West of Point de Monts on the north shore the Godbout and Sheldrake, two noted salmon streams, fall in. Next follow the Manicouagan (224 miles long) and the Rivière des Outardes (234 miles), these are the largest southward flowing streams in Labrador. They rise in the central water-parting of the peninsula. A shoal 16 miles long off the mouths of these rivers causes vessels to take plenty of room in passing. Farther up is the Bersimis, or Betsiamites, a river 112 miles long, often used as a route to Labrador. Many rivers, more noted as salmon streams than for

anything else, fall in before the mouth of the Saguenay is reached. The Saguenay is, next to the Ottawa, the largest tributary, and in a line from its mouth across the river are Red Island in the centre and Green Island near the south shore, marking a change in the navigation.

The south shore of the St. Lawrence for a long distance from Gaspé is very high and bold, for the mountains rise up from the bank wooded to their summits, and there is little room along the river bank, excepting for small fishing hamlets. At Metis the mountains begin to turn away from the river, and cultivation commences. At Rimouski the mail steamers land their mails to be transferred to the Intercolonial Railway. Bic is the next point of note. Bicquette Island lies off the shore, and here the ocean navigation may be said to end, for it is the eastern cruising ground for pilots, who are usually taken on there, although, in fact, there are no special dangers to navigation below Green Island opposite the Saguenay. The rivers falling in upon the south side are small.

Opposite the mouth of the Saguenay the river navigation commences, for the channel divides. Red Island is the beginning of a series of islands and shoals, such as White Island and Hare Island in mid-channel, although the river is yet 20 miles wide. Vessels usually take the south channel. The river bank is 50 to 100 feet high; the country is level, and there is a continuous line of farms up to Quebec. Cacouna, Rivière du Loup, and Kamouraska, are favourite summer watering-places.

On the north shore at the mouth of the Saguenay the land again rises. The mountains skirt the shore, and round Murray Bay the scenery is very impressive. At Les Eboulements the mountains rise to 2551 feet, and continue around Bay St. Paul to Cape Tourmente, where they retire from the shore to form an amphitheatre round

Quebec. The northern channel of the river is deep and clear, but the south channel is usually followed, as the anchorage is better.

The south channel passes between Red and Green islands. Between Isle aux Coudres and Pointe St. Roch the channel again divides. Goose Island, Crane Island, and a cluster of other islands, narrow the deep water channel, although the river is 13 miles wide. Here is the Traverse, where the tides attain their greatest velocity, ebbing and flowing at the rate of 8 knots an hour. The tidal wave enters the estuary with a wide front, and off Gaspé runs at the rate of $2\frac{1}{2}$ to 3 knots. After passing the Traverse the beautiful and fertile island of Orleans divides the river into two channels, which unite at its upper end to form the great basin of the harbour of Quebec.

Geology

In describing the contour of the land three divisions were indicated—the central plain, the northern or Laurentian area, and the south-eastern or Appalachian area. The central plain is underlaid by Cambro-Silurian rocks in almost horizontal stratification. The lowest in the series is the Potsdam sandstone, resting directly upon the contorted Laurentian rocks. This is succeeded by beds of impure magnesian limestone, known as the Calciferous formation. A series of highly fossiliferous limestones follows—the Chazy, Black river, and Trenton limestones. The Trenton beds are widely extended, and from Quebec to Kingston the cities are built of stone from quarries in that formation. The Utica formation which succeeds consists mainly of black bituminous shales, passing gradually into the Hudson river formation, where the shales cease to be bituminous, and impure sandstones

occur. The greater part of the plain country is underlaid by these limestones and shales, the Potsdam and Calciferos being found upon the margin. Small areas of Silurian of the Medina formation occur, and, at St. Helen's Island, near Montreal, is a little patch of Lower Helderberg. The isolated volcanic hills across the plain have already been noted. They consist of nepheline syenite, or of syenites of the usual types.

North of the plain and north of a line from Cape Tourmente, 20 miles below Quebec, to Lake des Chats on the Ottawa, the whole country is Laurentian up to and over the water-parting, until the limestones which slope down to Hudson's Bay are met. The peculiarities of the Laurentian country have already been described, and need not be repeated. It must be observed, however, that large portions of this northern country have not been examined, and that Huronian rocks are being found constantly in regions supposed to be solely Laurentian. Several large areas of intrusive anorthosite rocks exist, one—the most important—near St. Jérôme, north of Montreal, another near Lake St. John, another on the north shore of the river near Isle aux Coudres, and several smaller areas in Labrador. This is the "Upper Laurentian" of former years, and has been called "Norian." At Lake St. John there is also an area of Cambro-Silurian rocks. In the gulf the island of Anticosti is Silurian with a northern border of Cambro-Silurian, and the Magdalen group is Carboniferous.

South-east of the central plain, and beyond the line already described as extending from Lake Champlain to Quebec, is the region of hilly Appalachian country extending to Gaspé. This is underlaid by an exceedingly complex series of rocks of pre-Cambrian, Cambrian, and Cambro-Silurian age, which have been much contorted,

folded, and overturned. They have been the subject of a controversy extending over thirty years, and for further details concerning them reference must be had to the special monographs of the Geological Survey. These rocks have been very much altered, and in them are the mines of asbestos and copper and the quarries of slates, serpentine, and marble of the Eastern Townships.

In the centre of the peninsula of Gaspé, around the basin of that name, and coming out in bold cliffs at Cape Gaspé, is an area of Devonian rocks. South of this the Silurian rocks of New Brunswick extend into the southern part of Gaspé, while close along the shore of the Bay Chaleur is a band of Carboniferous rock in which, at the extreme edge of the province, a thin seam of coal has been found.

Population

The population of the province of Quebec is given in the census of 1891 as 1,488,535. It increased only 9·53 per cent during the previous decade. The natural increase of the French Canadian people is very rapid, but a continual drain is kept up upon the population of the province to supply hands for the factories of New England. The French Canadians are quiet, industrious, and contented. For carpentry, masonry, and the kindred trades they have a natural aptitude. A French Canadian will accomplish as much with an axe as a man of any other race with a full outfit of tools. They have not moved to Manitoba and the North-west as was confidently expected, and have allowed the English to fill up those territories, while they form a large proportion of the operatives in the manufacturing of the cities. This movement to the towns seems to be universal, and Canada has not escaped it.

In 1871 the proportion of city to rural population was 19·5 to 80·5 ; in 1891 it was 29·2 to 70·8.

Of the whole population of Quebec in 1891 94·4 per cent were born in Canada, and 80 per cent of the people spoke French as their mother tongue. Out of the whole population 1,291,709 were Roman Catholics ; 75,472 were Anglicans ; 52,659 were Presbyterians, and 30,416 Methodists. The density of the population is 6·5 to the square mile.

Education

Very difficult problems presented themselves to the statesmen of Canada in connection with education in the province of Quebec ; for not only are 85 per cent of the population Roman Catholic, but 80 per cent speak French as their mother tongue. The subject is everywhere else a battleground for opposing theories of Church and State, and, in Quebec, unless the overwhelming majority of French Catholics had manifested the utmost consideration, the Protestant minority of 15 per cent would have found themselves after confederation in a very uncomfortable position.

By the fundamental law of the confederation education is a subject within the exclusive power of the provincial legislatures, but the then existing educational status was guaranteed to the respective minorities, and it was also enacted that the Protestant minority of Quebec should have the same privileges enjoyed by the Catholic minority of Ontario. This was not satisfactory in every respect to the Protestants of Quebec, for they had been calling for amendments to the existing law. The question was likely to interpose obstacles to the consummation of confederation, but all objections were removed by a promise made by the leaders of the

Roman Catholic majority that the required legislation would be passed at the first meeting of the new provincial legislature—a promise which was faithfully redeemed. These additional conditions are therefore not guaranteed by the fundamental law but exist under enactment of an overwhelmingly Roman Catholic legislation—a fact worthy of very especial note, and in the highest degree creditable to the majority.

It will not be possible to enter into the details of a system devised to meet difficulties so great. One leading feature is that all the public schools are religious, or to use a common phrase, denominational. There is a superintendent of education for the whole province, a non-political officer, assisted by a council divided into a Roman Catholic and a Protestant committee, each with a secretary who is the chief administrative officer for Catholic and Protestant schools respectively. These committees meet separately as a rule, though they may, and occasionally do, meet together as the council. Each committee supervises the expenditure of the proportion of public money allotted to it, and each has its own normal school and appoints its own teachers and exercises control by the inspectors over its own schools under the general law. The legislative grant for higher education is divided according to population—the Protestants receiving one-seventh; of the grant for normal schools the Protestants receive one-third, and the elementary school grant is divided according to population. This is supplemented by local municipal taxation through local trustees. In the cities the tax-payers are divided into three panels. The money of Protestants is paid to the local Protestant school board, the money of Catholics to the Catholic board, and the taxes of corporate bodies are apportioned between them according to population.

The Catholic schools number 4886 with 265,132 scholars, and the Protestant schools 1002 with 37,061 scholars. In the Catholic schools religious teaching is a strong feature; the Protestants have more difficulty because of their divisions. Nevertheless their schools are all conducted on a religious basis, and begin with singing and prayer. Instruction in religion and morals is based on reading from the Old Testament, the Gospels, and the Acts, and the children commit to memory portions of the Gospels and Psalms, together with the Apostles' Creed, the Decalogue, and the Lord's Prayer. If the Protestant Committee wished to secularise their schools there is nothing in the law to prevent them doing it. The religious teaching is deliberately preferred and therefore enjoined.

The system is founded on the most scrupulous consideration for the rights of Protestants and Catholics alike, and although it may not be so perfect that it meets every case which can arise, it is worthy of study as a contribution to Christian toleration.

Government

The province differs from all its sister provinces, except Nova Scotia, in having a double chamber. The lieutenant-governor is, as in the other provinces, appointed by the Dominion Government. The legislative council, or upper house, consists of twenty-four members appointed for life by the provincial government of the day, and the popular house, or legislative assembly, consists of seventy-three members elected for five years. The executive government is a ministry of eight members, responsible to the legislature and holding office so long as they command a majority in the popular chamber. French and English

are spoken in the debates, but much more French than English is heard, and all public documents are printed in both languages. The civil law of the province is the civil law of France based on the Roman law, and it is codified in a compact and logical form. It was continued by the Quebec Act of 1774, previously referred to, and can be changed by the legislature of the province alone. The criminal law introduced by the same measure is English, and is uniform over the Dominion. While its principles are English it now rests on Dominion statutes. The municipal system of local government extends over the province, the elementary unit being called a parish in the French districts and a township in the English districts. Under the French régime the country was organised as it was settled into parishes under curés and, as in remote times in Europe, the ecclesiastical preceded the civil organisation. Although of recent years the erection and division of canonical parishes is frequently accompanied or preceded by a corresponding civil change, the ecclesiastical parish and civil municipality are not of necessity identical, but the intervention of the civil power must be invoked to secure civil results.

The law is administered by judges appointed, as in the other provinces, by the Crown on the advice of the Dominion ministry. It is needless to add that the proceedings are conducted either in French or English, the lawyers speaking both languages with equal facility, and changing oftentimes abruptly from one to the other as the momentary phases of a trial may require.

The tenure of the land was originally feudal, grants having always been made *en seigneurie* according to the *coutume de Paris* for the most part. The feudal system had its advantages; for every grant carried conditions of settlement with a penalty of reunion to the Crown domain.

Every seigneur was interested to secure settlers at nominal rents, and the hardships of the condition of censitaires were superstitions of the English imagination accustomed to another system. Nevertheless the feudal tenure became unsuitable to the social condition of the country, and in 1854 the Government bought out the rights of the seigneurs and changed the tenure to one of free and common socage.

Communications

The population of the province is settled mainly in the valley of the St. Lawrence and its larger tributaries—the immense territory to the north is undeveloped. As the population advances it is followed up by railways, and, indeed, in very many instances, the railways precede the traffic and create it. The total number of miles of track laid is 3139, about half the amount of railway laid in the province of Ontario, but the distribution of the population is such that the people are well provided with railway service. Steamers ply on all the rivers, and there are direct connections with all parts of the world. All these communications centre at Montreal, or Quebec, and to avoid repetition will be given in that connection. The shipping business, inland and ocean, of the province is best seen in the statistics of the port of Montreal where nine-tenths of it is done. The rivers are great highways in summer, and steamboats of all sizes ply on the inland waters, from the large and luxurious steamers on the passenger routes from Quebec to Toronto to the smaller craft upon the smaller rivers.

Agriculture

The St. Lawrence provinces of Canada have, from their first discovery, been noted for their agricultural

wealth. Jacques Cartier in 1535 marched to the Indian town which occupied the site of the present city of Montreal, through "the fairest and best countrie that possibly can be seene," "through goodly and large fieldes full of such corn as the countrie yieldeth. It is even as the millet of Bresil, as great and somewhat bigger than small peason, wherewith they live even as we do with ours." In the midst of these fields "is the city of Hochelaga," "tilled round about very fertill." The old English of Hakluyt's translation reproduces the spirit of the narrative better than more modern English. Cartier had never seen maize before, and he walked through fields of it growing on the land now occupied by the busy streets of Montreal. That was 362 years ago, and ever since then seed-time and harvest has never failed in Canada for the growth of maize—a crop which will not ripen in England.

The wise Talon—Intendant in 1665-68 and in 1670-72—saw the capabilities of the country, and wrote of them to the king, pointing out how the surplus wheat, lumber, and fish products might afford a much-needed supply to the French West Indies. At the beginning of the present century the centre of the wheat-producing country of America was in the Richelieu valley. There were large exportations by the Richelieu valley to Vermont and the neighbouring states, as well as from Quebec by sea. But the richest soil will not endure the same crop for a hundred years, and the centre of wheat culture moved steadily westward to the virgin soil of the Red River valley. The valleys of the Richelieu and St. Lawrence are now renewing their youth by mixed farming, and, while it is impossible to compete in wheat growing with the new North-west, the proximity to a market gives the Quebec farmer an advantage in other crops. The

number of acres under crop in the province in 1891 was 5,542,780, in pasture 3,054,539, and in garden and orchard 73,627. There were 191,599 acres in wheat: 107,095 acres in barley; 1,327,842 acres in oats; and 2,457,023 acres in hay. All the ordinary crops are produced—wheat, barley, rye, oats, maize, pease, together with pumpkins, melons, tomatoes, potatoes, and other vegetables grown in temperate climates. Fruits, such as apples, plums, cherries, and pears are raised in large quantity. Grapes are grown in the open air near Montreal, and by the census of 1891 the annual production of tobacco grown in the province was 3,958,737 lbs., and the quantity of maize was 790,685 bushels. Maple sugar was produced in the same year to the extent of 18,875,231 lbs. Much attention is given to stock raising and dairying. The last returns (1894) report 581 cheese factories in the province, producing 31,554,746 lbs. of cheese, and 145 creameries, producing 4,924,504 lbs. of butter; the aggregate value of both is estimated at \$4,140,376.

While the summer has never failed to ripen the crops, (and nowhere out of the tropics can more than one crop a year be harvested), the winter is not an idle time for Canadian farmers. The snow makes good roads everywhere, and it is the season for hauling wood or produce. The melting snow in the spring aerates the soil, and land ploughed in the fall is pulverised by the relaxing frost. Those who fancy that country life in winter is dreary are mistaken. A native writer describes it as follows:—

“In the country one can go everywhere upon snow-shoes, but chiefly is it a delight to walk in the woods in winter. The snow covers the rough places with an even white carpet, and the heaviest wind is shut out by the branching trees. The stillness and solemnity of the

woods in winter cannot be described to those who have not experienced it. There is, however, no lack of life there. The field-mice and the hares and the squirrels and the partridges are busy enough, as their tracks on the snow testify. They seem to be always visiting. It is warm for them under the snow, and they enjoy their winter life.

"Then, in the open there is abundant enjoyment for the eye. The light of the winter sun is made the most of. It is not swallowed up by a black and gloomy landscape, but reflected and redoubled from the earth's snowy raiment into changing gradations of white as the clouds float over the blue sky or the sunset tinges it with faint rosy hues. There are numberless tints of white of indescribable delicacy, always gliding over the snowy fields."

Forest

The forests of the province have been treated of elsewhere. It is, however, of interest to observe that, during the years 1895 and 1896 the legislature has set apart the Laurentides National Park "to preserve its forests, fish, and game, to maintain an even water supply and to encourage the study and culture of forest trees." The park is directly to the north of Quebec city in the counties of Quebec, Montmorenci, and Charlevoix, and is on the head waters of streams flowing into the St. Lawrence, the Saguenay, and Lake St. John. It covers an area of 2640 square miles or 1,689,400 acres. The lakes and streams abound with trout, partridges are plentiful, and a portion of the park is noted as a hunting ground for caribou. Another large forest area north of Montreal, near Trembling Mountain, has also been reserved for the same purposes.

The recent developments in the applications of wood fibre in the arts, have a most important bearing on the industries of the province, for the forests of available pulpwood in northern Quebec are inexhaustible, and the water power is without limit. The present product is large and extensive, mills are being erected to manufacture for export.

Minerals

The province of Quebec does not compare in mineral wealth with some of the other provinces. Asbestos is mined in the Eastern Townships, and nearly the total production of the Dominion, amounting to \$421,690 in 1895, is from that district. Copper, iron, and gold are worked, but not to any great extent in recent years. Mica and graphite are abundant, and apatite exists in large quantity, but the export has ceased.

Subdivisions of the Province

In order to give a more detailed account of a province, which in area is ten per cent larger than France, it will be convenient to subdivide it into districts, and the most convenient division is the following :—

1. Southern or Quebec Labrador.
2. The Saguenay region.
3. The Ottawa and St. Maurice region.

The above are north of the river.

4. The Gaspé district.
5. The Eastern Townships.

These are south of the river.

6. Quebec and the surrounding district.
7. Montreal and the surrounding district.

These are in the central plain.

1. Southern Labrador

The peninsula of Labrador is the subject of a separate chapter ; the object of the present section is limited to the southern portion known as Quebec Labrador, a belt of country rising to the central tableland of the peninsula. This is highest at its southern side, and the rivers flow down the comparatively narrow southern watershed in violent rapids and cascades. The general height of the tableland is 1500 to 2000 feet, but on the southern side it frequently rises to 2240 to 2500 feet, and the rivers have cut deep chasms through the rock in their precipitous course. On the coast-line, wherever trees may find soil to grow, they are of stunted growth, but at a little distance back there is a continuous forest, of which black spruce is by far the most abundant tree. The others are aspen poplar, Banksian pine, balsam poplar, cedar, white spruce, paper birch, larch, tamarack, and juniper. The trees, however, do not reach any great size. The edge of the central tableland on its southern side runs in the general direction of the shore of the gulf and estuary at a distance varying from 50 to 150 miles. The ascent to the high land of the interior is difficult, for the country is rough and tangled. The Montagnais Indians descend from the interior chiefly by the St. Augustine river on the east and the Bersimis on the west ; but, at best, the task is laborious, and the mosquitoes and other flies are, when in season, quite phenomenal in activity.

The Strait of Belle-isle, the northern entrance to the Gulf of St. Lawrence, is 35 miles long, with a width of 10 to 12 miles. The water is deep—50 fathoms on an average—and the strait is clear of rock or shoal. Recent surveys have shown that there is not, as has been supposed,

a constant current setting inwards, but that the Arctic current passes the strait to flow down the outer coast of Newfoundland. The current has been shown to be mainly a tidal one, and to be affected by the prevailing wind. Nevertheless, although the current flows sometimes out and sometimes inwards, there is a preponderance in the direction inwards, and this would seem to be proved by the fact that icebergs have been seen off Natashquan Point. The strait is within the jurisdiction of Newfoundland, but the lighthouses are maintained by Canada.

The boundary of Quebec is at Blanc Sablon harbour, at the inner end of the strait. It would seem to have been a resort for fishermen in very early times. A little river at the head of the bay has formed a beach of white sand, which, on a coast of rock, is unusual enough to give a name to the bay. It is 800 miles distant from Quebec city. The port is much frequented in the fishing season, and there are, besides, several permanent establishments and about 200 residents. The boundary is drawn just west of the port, which thus belongs to Newfoundland. Greenly Island, at its entrance, is still, as described by Cartier, "the island of birds, in which there is great store of godetz and crows, with red beakes and red feete, they make their nestes in holes under the ground even as conies." These are the Arctic puffins, and they are as numerous now as in 1534. This northern arm of the gulf was frequented in early times, and known as La Grande Baye. It is remarkable that although Pedro Reinel, in 1505, showed the strait by unclosed lines, and although several later maps indicate its existence in the same way, Newfoundland was thought a part of the main continent until Jacques Cartier's second voyage, when he sailed out by Cabot Strait.

Bradore Bay, the next harbour, was known to the French first as *La Baye des Espagnols*, and afterwards M. de Courtemanche, who obtained a grant of it in 1702, called it Phelyppeaux Bay. It was an early resort of Basque whalers from San Sebastian in Spain, for there was no whaling ground in those days like the Grand Bay.

Esquimaux Bay, the next great bay, was called Old Fort Bay in early times, and in it is an island still called Old Fort Island. This was the harbour of Brest, and Cartier sailed to it as to a known port, and farther on he found a vessel from Rochelle looking for it. It must not be supposed, however, that it was anything but a resort of fishermen in the summer season.

The coast between Blanc Sablon and Cape Whittle is very rocky and bold, and deeply indented with harbours; but it is skirted by a maze of rocky islets among which no vessel of any size may safely venture without a pilot who knows the coast. It is entirely bare of trees—stunted spruce and birch may be found at the heads of the inlets, but only moss on the rocky coast. Jacques Cartier's remark that he did not see a cart-load of earth on the coast is not too strong. The mainland is generally high. The hills about Bradore are 1264 feet, and the average height of the land is about 500 feet. The Esquimaux river and the St. Augustine river are large rivers tumbling down in falls and rapids from the inner tableland.

The coast from Cape Whittle to Point de Monts turns sharply to the westward, and the land gradually falls, but it is still sheltered by a maze of rocky and barren islets of all sizes. The chief rivers are the Olomonsheeboo, the Natashquan, the Agwanus, the Romaine, the Mingan, the Magpie, the Moisie, the

Pentecost. At Natashquan the river makes a long and sandy promontory, and there, as well as on many other places along the coast, the sand is so full of iron that ships' compasses are affected. Mount St. John is the highest point on this part of the coast, and it is an isolated peak 1416 feet high. As the coast passes west there are low cliffs on the shore, but inland the land is high. The harbours are few and suitable only for small vessels. Mingan, however, has a very good harbour, and at Seven Islands there is an excellent harbour for large ships. From Seven Islands to Point de Monts the coast is quite low and the high land distant.

As the shore proceeds west from Cape Whittle it becomes more wooded, but the timber is spruce, and birch of small size. The climate moderates, and cultivation of the soil is carried on to some slight extent. All the rivers are famous for salmon, and they are all leased by wealthy people who go down in the fishing season. The number of settlers is small—there are Hudson's Bay posts at different points, and a few scattered families along the coasts, at the sealing, salmon, and fur-trading posts. As far as St. Augustine they speak French, but east of that point English begins to prevail. At Esquimaux Point is the largest settlement on the coast. It numbers 1751 souls, who are supported by fishing and sealing. St. Geneviève Bay near there was called by Cartier "St. Lawrence Bay," and from it the name gradually spread over the whole gulf. Egg Island is noted as the place where Sir Hovenden Walker's great expedition for the conquest of Canada was wrecked in 1711, when eight transports and eleven hundred lives were lost.

Climate

The climate is severe; although, as the coast is continually trending to the southwards, it gradually decreases in severity from Blanc Sablon to Point de Monts. There are no observing stations along the coast for the whole distance from Blanc Sablon. In sheltered spots along the coast, turnips, cabbages, and potatoes grow, though not to a large size, but the settlers keep cattle; for a coarse though sweet grass grows abundantly in places where the land is level, and this grass will grow quite early in the spring and attains some length before the snow disappears. Although the climate is severe, it is more from deficient heat in summer than excessive cold in winter. Mr. Stearns, who resided at Esquimaux Bay in winter, did not observe the thermometer go lower than -27° , and he adds that on the majority of winter days the mercury hardly reached zero. The winter he passed on the coast was said by the residents to have been unusually mild. There is no meteorological station nearer than Belle-isle which is north of Blanc Sablon. The figures following are for the year 1890.

MEAN TEMPERATURE

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-6.1	6.6	14.3	26.3	35.5	40.8	55.9	55.1	48.3	38.7	29.1	13.1

Mean of the year $29^{\circ}61$.

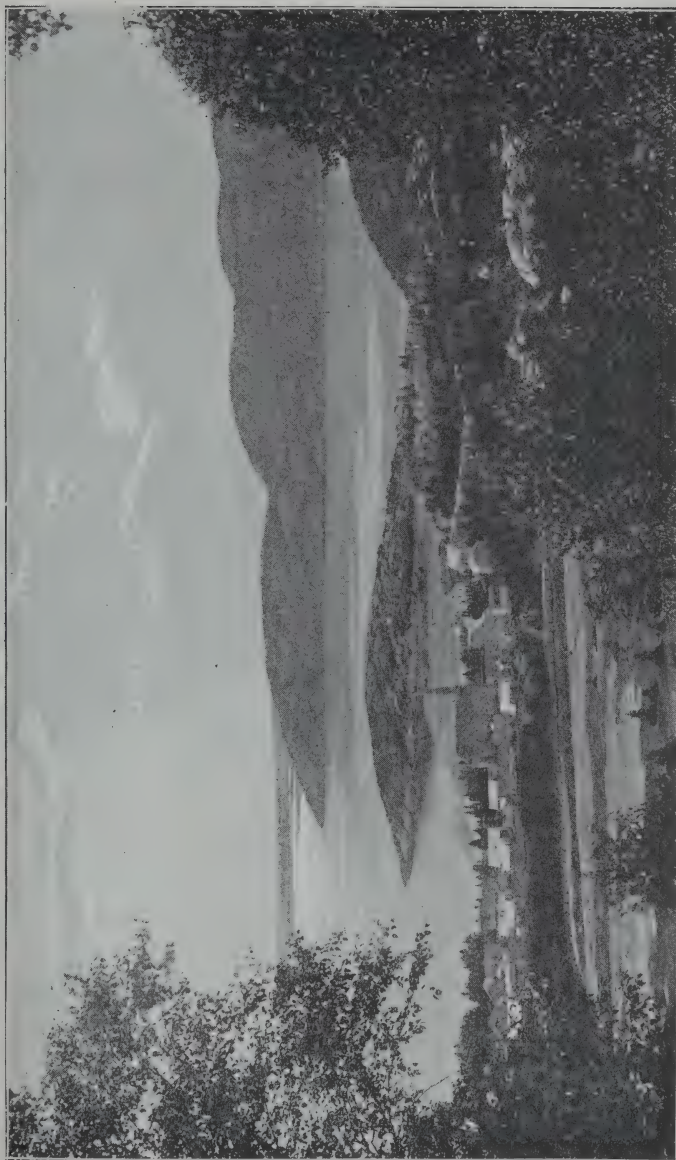
The highest point touched was 70° in August. The readings throughout the summer were usually 55° to 60° . The lowest point in winter was -21° , but all through January the mercury only once rose to $+8^{\circ}$.

In summer the coast is frequented by many fishing and trading vessels. Sometimes at Bonne Esperance Bay there are as many as 100 schooners at anchor at one

time. The residents on the coast live by the fisheries in summer. In winter they trap and hunt, and in spring they hunt seals on the ice. The furs of Labrador are of excellent quality. Caribou are plentiful in the interior, and the bays and islands are the breeding-ground of ducks and geese innumerable, while the seas abound with fish. The climate does not seem to incommode the inhabitants, who, with all their hardships, obtain a far better livelihood than the poor of great cities, and they are really attached to their free and adventurous life. There is a mail once a month in winter as far as Blanc Sablon. Travel in winter is by dogs over the snow and ice when the inlets freeze, for there are no roads.

2. The Saguenay Region

The savages who greeted Jacques Cartier told him there were three kingdoms in the country—Saguenay, Canada, and Hochelaga, and in fact the Saguenay region has always been kept, as it were, apart from the rest of Canada. Under the French régime it was *Le Domaine du Roi*, *Traité de Tadoussac*, *Postes du Roi*, and was leased to contractors or companies. Under the English régime it was known as the King's Posts, and leased to the Hudson's Bay Company. Tadoussac, at the mouth of the river, was a trading post before either Port Royal or Quebec was founded. Even before A.D. 1600, when Pontgravé and Chanvin traded there, the Basques frequented the river for the whale fishery, and, at l'Echa-faud aux Basques, a little beyond the mouth of the Saguenay, remains have been found of their utensils for rendering blubber. The name Tadoussac signifies *knolls* = French *mamelons*, from the shape of the neighbouring hills.



Notman, Photo.

TADOUSSAC, SHOWING THE MOUTH OF THE SAGUENAY RIVER.

The river Saguenay is remarkable for its immense volume and great depth. Inside the bar the depth is from 100 to 145 fathoms. There is not a rock or shoal, and it is navigable for the largest ship afloat to Point Roches, 57 miles from the mouth of the river. Small vessels may go up to Chicoutimi, 6 miles farther. The lower Saguenay is the sternest and gloomiest stream in



Notman, Photo.

CAPES TRINITY AND ETERNITY, RIVER SAGUENAY.

the world. It is more like a profound mountain loch, with a breadth of from three-fourths of a mile to two miles of water, black with the shadow of savage cliffs rising sheer 1000 to 1800 feet from the sullen surface. The cliffs are bare; for fire has swept away such forest as the scanty soil would permit to grow and left only the charred spikes. Wooded valleys run up between the hills along the little tributaries, but they also are dark and gloomy. The savage grandeur of the scenery culminates at Capes Trinity and Eternity, the southern and

northern headlands of Eternity cove. Gloomy and grim as fate, these terrible cliffs frown over the black abyss of water; and the report of a gun, which is generally fired from the tourist steamers in summer, reverberates in numberless explosions from cliff to cliff round the bay, and far up and down the black river.

From Ha Ha, or Grand Bay, a valley of good land opens up westwards by Lake Kenogami, and the country around Chicoutimi is fertile. It is a prosperous little town with a college and a bishop's see, and is a good point for shipping lumber. Above Chicoutimi is Le Grand Remous, a series of rapids which stop further navigation.

The Saguenay is the discharge of Lake St. John, an almost circular basin 28 miles by 20, with an area of 365 square miles. It is 278 feet above the sea, and the river passes out in two tremendous rapids—La Grande, and La Petite Décharge. From the point where they unite it is possible for a skilful boatman to go down the river in a canoe without a portage to a point 12 miles above Chicoutimi. The river runs its rapid course between hills 300 to 500 feet high, clothed with maple and birch and other deciduous trees; nor is there anything of the gloom of the lower river.

Lake St. John is a shallow lake surrounded by high hills, protecting it from the raw east winds. The country around is fertile and settled by a contented population of farmers. Many considerable rivers empty into the lake. The longest—the Ashuapmouchouan (where we watch the deer) is considered as the upper course of the Saguenay. The other rivers are the Mistassini, the Peribonca (water flowing through sand), the Metabetchouan (coming out as a rapid), the Ouatchewan (see the falls), and several others of minor importance. These

two last streams descend in cascades from the mountains. The fall of the Ouatchewan is visible from the lake as one mass of white foam against the hillside 236 feet high. In the spring, when the snow melts and all these rivers rise in flood, the Saguenay is not able to discharge all the water, and the lake rises 20 to 27 feet.

Far up in the interior, 270 miles north-west of Lake St. John and 110 miles beyond the height of land, is the great Lake Mistassini, the largest lake in Labrador. The water-parting at this point is 1360 feet above the sea, and if the ascent is laborious the portage across is only half a mile. Mistassini is practically two parallel lakes divided by a range of islands in the centre—the western is 90 miles long, and 13 to 17 miles wide; the eastern is 60 miles long and 5 to 10 miles wide. It is reached by the rivers flowing into Lake St. John, and drains by Rupert's river into James Bay. The adventurous Jesuit, Father Albanel, passed to Hudson's Bay by this route in A.D. 1672. Lake Mistassini is 300 to 400 feet deep. The soil around the lake is good enough, but the summer is too short for crops. The lake is on the height of land, and the trees do not attain full size. It is full of fish—lake trout, river trout, whitefish, pike, and pickerel—and these are the main support of the Indians. Ducks and geese abound in their season, but the caribou have been hunted to extinction.

3. The St. Maurice and Ottawa Districts

On the north shore of the St. Lawrence the settlements have not penetrated any distance into the Laurentian plateau. The enormous territory between the head-waters of the Saguenay and Ottawa is still a wilderness. In the summer season the innumerable

lakes are visited by anglers, and far up the lumbermen in winter carry on their operations by felling the trees for floating down when the snow melts and the rivers rise in spring. The country has all the wild charm characteristic of Laurentian country. It is covered with forest, but the streams penetrate everywhere, and the lakes expand into still pools. The great rivers interlock at their heads so that it is easy to go up by the Saguenay waters from Lake St. John and portage into the Batiscan, the St. Maurice, or the Ottawa. From this treasury of sparkling waters flow innumerable streams, each with its rapids and falls. Only a few can be mentioned. Visitors from Quebec may see the falls of St. Anne, or la Puce, or St. Féréol. Close to Quebec are the beautiful falls of the Montmorenci, 224 feet high—far more beautiful before they were harnessed to turn a mill. West of Quebec are the Jacques Cartier and the St. Anne, and the Batiscan, all charming streams of sunny pools and impetuous rapids. At Three Rivers the St. Maurice falls in; an important river 300 miles long. About 25 miles from the town it throws itself into a chasm by a fall of 150 feet—the Shawanegan Falls.

Many other rivers fall in to the westward—the Loup, the Maskinongé, the Assumption, the Achigan, all lumbering streams. North of Montreal the rivers turn towards the west and flow into the Ottawa. Settlements extend 100 miles north of Montreal into the Laurentides, for there is good land in the valleys of the streams and lakes. A railway now leads up to Trembling Lake, and the cottages of summer visitors are seen on the lakes beside the pioneer farm-houses. In the pure clear air of these highlands is a veritable sanatorium for weak lungs.

The Ottawa River.—This is the largest tributary to

the St. Lawrence. It is 780 miles long and drains an area of 80,000 square miles. It rises in small lakes very near the intersection of 48° N. lat. and 76° W. long., and before it enters Lake Temiscaming it flows to almost all points of the compass in succession through lakes and rapids, and receives the waters of more than twenty large tributaries and innumerable small ones. The Grand Lake Victoria, a large lake 700 feet above the sea and of very irregular form, is in its course, but it takes its final direction on leaving Lake Temiscaming (deep water), and that lake is practically the head of the river. As its name purports, it is very deep. It is 612 feet above the sea, 1 to 5 miles wide, and 75 miles in length. It is 233 miles above Ottawa city, and may now be reached by railway. The land round the head of the lake is being settled by farmers. The scenery on the lake is very fine. All over this region are forests of red pine, white pine, maple, elm, ash, birch, spruce, and cedar. The Ottawa is not a very navigable river, but there are steamboats on the lake and on all the quiet reaches between the interruptions to navigation. The Canadian Pacific railway runs along its bank as far as the lake. From the foot of Lake Temiscaming the Ottawa is a series of rapids to the junction of the Mattawa 508 feet above the sea. After a stretch of quiet water the Rocher Capitaine and the Des Joachims succeed, and, with a total drop of 148 feet, the Ottawa enters into a gorge of high rocky walls on the north, and steep sloping banks on the south, known as the Deep river. It is here a mile wide, and so deep that rafts with 100 fathoms of chain cannot anchor in it. The Deep river is 360 feet above the sea. The river then divides at Fort William, an old Hudson's Bay Company's post, and encloses a large island—Allumette Island, after which it flows through

rapids into Lake Coulonge. After another quiet reach another series of rapids follow, and the river drops through 135 feet to Portage du Fort at the head of Lac des Chats. This lake is 50 miles long, and at its foot the river flows in a crescent of 30 independent *chutes* 50 feet high into Lake Deschenes (25 miles long). From that lake the river drops 40 feet by the Chaudière falls at Ottawa city 121 feet above the sea. From Ottawa the river is navigable to Montreal by means of the Grenville canal, by which the rapids of the Long Sault and Chute à Blondeau are overcome.

The chief tributaries of the Ottawa on the north-east, commencing from the head of the river, are the Keepawa, falling in with a cascade 120 feet high; the Demoine; the Black river, 120 miles long; the Coulonge; the Gatineau, 420 miles long, draining a basin of 12,000 square miles; the Lièvre, 170 miles long, draining 4000 square miles; the Rouge, 120 miles long; and the Rivière du Nord. On the south-west, or Ontario side, it receives the Montreal river, an old canoe route to Hudson's Bay; the Mattawa, the old canoe route to the upper lakes; the Petewawa, 140 miles long; the Bonnechère; the Madawaska, 240 miles long; the Mississippi; the Rideau, the route by canal to Lake Ontario; and the Nation. All these are important lumbering streams.

4. The Gaspé District

The peninsula of Gaspé has been partially described in previous remarks upon the contour of the land and the general geology of the province. The interior is unsettled and unsurveyed. As previously stated, there are villages of fishermen in sheltered coves at the mouths of rivers along the shore of the St. Lawrence, but there is



HEAD OF GASPÉ BASIN.

Nelman, Photo.

no harbour until Gaspé Bay is reached. This magnificent bay is $7\frac{1}{2}$ miles wide, and extends 20 miles inwards to a land-locked basin where vessels may lie as secure as in a dock. The bay affords excellent anchorage, and the harbour is one of the best on the Atlantic coast, with room and depth of water for any number of vessels. The harbour branches into two arms, and the York and

*Notman, Photo.*

PERCÉ ROCK, BAY CHALEUR.

Dartmouth rivers fall in respectively at the head of each. These streams are famous salmon rivers. The scenery all round Gaspé is very beautiful and bold, especially near Cape Gaspé, a cliff of Devonian limestone, 692 feet high. At Douglastown and at several other points on the bay are settlements of people dependent directly or indirectly upon the fisheries.

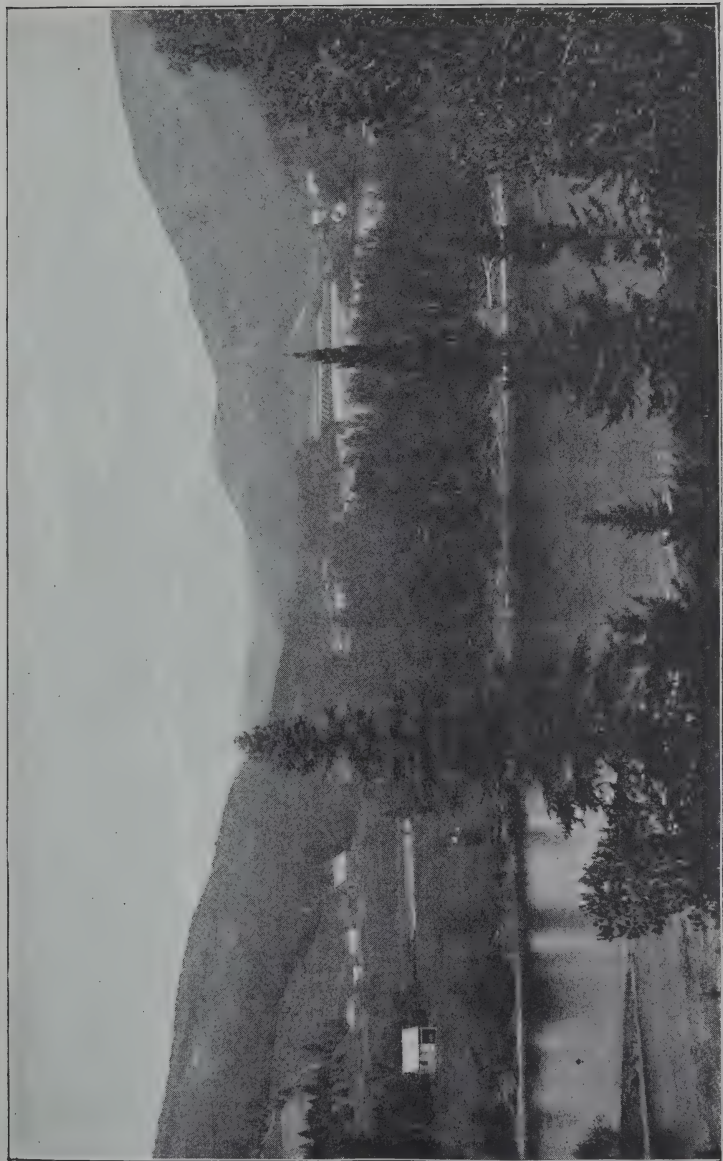
Following the coast round into the Bay Chaleur is Cape Percé and Bonaventure Island. Close to the village of Percé is a precipitous island rock rising sheer 288 feet out of the water. It is 1400 feet long and 300

feet wide, and is pierced through by an opening 30 feet wide and 60 feet high, like an archway, through which at high tide fishing-boats may sail. Its top is inaccessible and is white with sea-fowl—gulls and cormorants. There were two arches fifty years ago, but the outer one fell and left the buttress, which is still standing. Back of Percé village is Mount St. Anne, 1230 feet high. It is a conspicuous object from the sea, the cliffs of red sandstone rising through the green of the encircling trees. Here are large fishing establishments, and, in fact, all along the coast are the establishments of the great Jersey fishing houses, and the settlers are largely Jersey people. Port Daniel and Paspébiac are also fishing villages with good roadsteads. At Carleton at the head of the bay is a good roadstead. The rivers Cascapédia, Bonaventure, and Matapédia are noted salmon rivers, and in fact all the rivers of Gaspé are leased for salmon-fishing.

The Bay Chaleur was settled first by refugee Acadians, and many United Empire Loyalists got grants there after the Revolution. The cod-fishing in the bay was very productive in former days, but has fallen off. The old Indian name was "the sea of fish," and large numbers of salmon and lobsters are still taken along the coast. The district of Gaspé has suffered for want of easy communication with the outside world. A railway is being built along the north of the bay, and will probably be efficient in opening the country to the travelling public, but hitherto this shore has been accessible to tourists only by means of steamers to the Gulf ports.

5. The Eastern Townships

This is a political, not a natural, division; for it includes the level country south of Montreal along the



Nabman, Photo.

THE METAPEDIA RIVER, QUEBEC.

international boundary, as well as the rolling and hilly country to the east, already described in the remarks upon the Notre Dame Mountains. It has already been stated that after the cession of Canada to the British Crown the French laws were continued, and that in 1791 an English province, now Ontario, was set off to the west of the existing settlements. The French had settled along the rivers only—the banks of the St. Lawrence, the Richelieu, and the Yamaska were continuously settled in several ranges deep, but beyond this “bordage” of cultivated land was a wilderness. Extensive tracts of this wild country were granted to families of Loyalist refugees from the revolted colonies, and grants were made in free and common socage, afterwards confirmed under Imperial statutes passed in 1825 and 1827. The question is a complicated one and not easy of explanation in small compass, but the idea was that the Eastern Townships, like Ontario, were to be English. The abolition of the feudal tenure assimilated the tenure of all land in the province, but of late years, as the virgin lands of the north-west were opened up and as manufactures were established, the English youth left the farm lands of the Eastern Townships, and moved to the cities or took up prairie farms in the new West. It has therefore happened that by a natural transfer of population the Eastern Townships are to-day much less English than they were fifty years ago, for, as the English moved away, the French bought their farms. The French Canadians are of a more social nature than the English, and dislike to move away from their churches, their laws, and the sound of their own language. In this way it happened that as the west became English the east became more French.

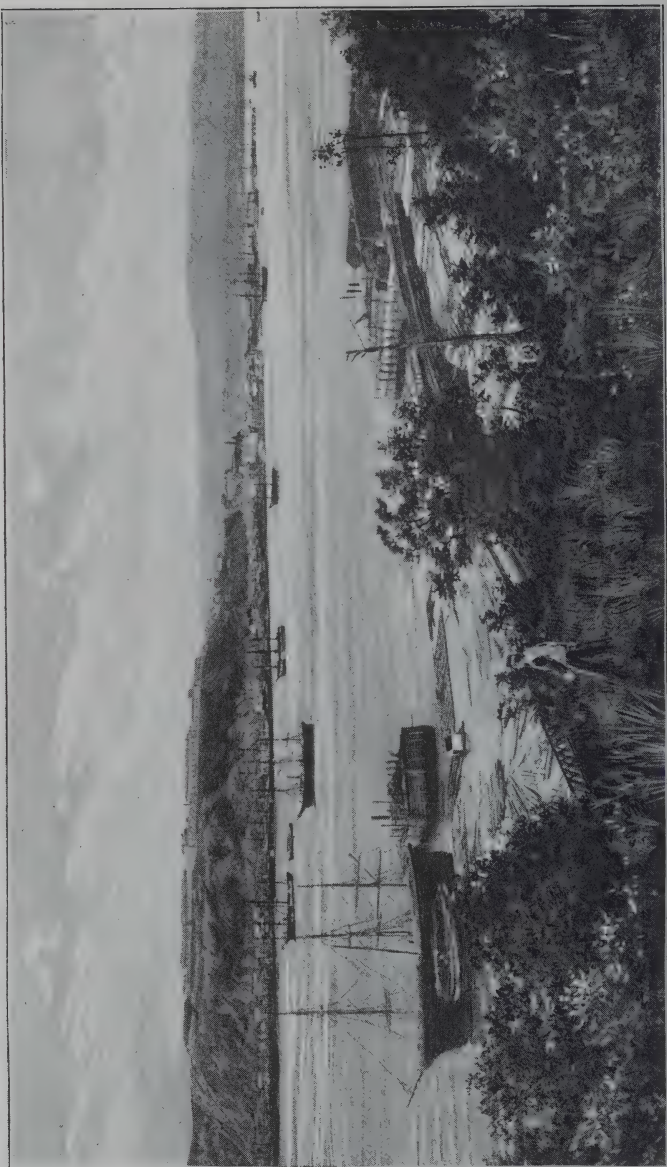
The Eastern Townships is an agricultural country, and

contains some of the best farming and grazing land in the Dominion. It is watered chiefly by the Yamaska and St. Francis, and by a number of smaller streams. The latter river flows from Lake St. Francis through a course of 130 miles to fall into the St. Lawrence at Lake St. Peter, not far from the mouth of the Yamaska. Lake Memphremagog discharges by the river Magog into the St. Francis, and at their junction is the city of Sherbrooke, a manufacturing town with a population of 10,110. There are large woollen and cotton mills, as well as other factories at Sherbrooke and on the Magog, and the town has increased 40 per cent in the decade 1881-91. The Magog is a very rapid river, and affords abundant water-power. The total value of the manufactures of Sherbrooke is given in the census returns as \$2,377,878. In the hilly eastern part of this district are the mines of slate, asbestos, and copper, previously mentioned.

6. Quebec and the Quebec District

Quebec (strait or narrows) is the happily descriptive name given by the Indians to the place where the northern and southern highlands draw together—where the great basin of the St. Lawrence is narrowest, and where the river itself, at Cape Rouge, only seven miles above the city, is narrower than in any other part of its whole course.

That wondrous strait where close th' opposing hills
To build the stately portal of the west.
There ! at the foot of that stupendous rock,
Which towers above a basin sheltered round
By mountains slowly stooping from their heights,
In terraces of verdure to the deep
And ever-tranquil water.



Nobman, Photo.

QUEBEC FROM HADLOW COVE.

The situation of the city is unequalled. Many have attempted to describe it, but none have done better than Charles Marshall. The following is a condensation of his description :—

“Unexampled for picturesqueness and magnificence of position on the American continent, and for the romance of her historic associations, Quebec sits on her impregnable heights a queen among the cities of the new world.

“At her feet flows the noble St. Lawrence, the fit highway into a great empire, here narrowed to a couple of miles’ breadth. From the compression of the great river at this spot the city derives its name. On the east of the city, along a richly fertile valley, flows the beautiful St. Charles, to join its waters with those of the great river. The mingled waters divide to enclasp the fair and fertile Isle of Orleans.

“The city, as seen from a distance, rises stately and solemn. Clustering houses climb the rocky heights. Great piles of stone churches, colleges, and public buildings, crowned with gleaming minarets, rise above the mass of dwellings. Above all rise the long dark lines of one of the world’s famous citadels, the Gibraltar of America.”

Quebec was founded in 1608 by Samuel Champlain, the real father of Canada, for his was the first permanent settlement of Europeans in the provinces of Old Canada. It was the wisdom of a man full of experience both as a soldier and sailor that chose the site, for there is none like it on the continent. At a distance of 846 miles from the open ocean at Belle-isle is a basin large enough to hold a navy, and deep enough for the *Great Eastern* ; for, after narrowing at Cape Rouge, the river widens at the city. The mountains around the city form a vast amphitheatre.

Look !

Those solemn hills, which close the distance dim
Of the far horizon, how their contours, clothed
With summer foliage, smile as they slope down,
Bathed in the sunlight, to the rippling flood
Which laps their bases ; and the azure vault
Mirrors its brightness with the changing hues
Of blue and purple in the dimpling waves—
An amphitheatre, whose circles vast
Rise upward from the central basin, reared
For high assembly of the earlier gods,
And Zeus' high seat might rest upon the Cape
And dominate the concourse. All the scene
Was clad in summer's livery. Blue in the sky
And water ; on the hills a living green,
Sheening to yellow in the twinkling birch,
And glooming in the pines—all glowing tints
Of the upper rainbow, for the autumn hues
Of crimson, gold, and scarlet were not yet.

Quebec is still the centre of the French life of Canada. Montreal is more cosmopolitan, for there the two races are equal in numbers, and there is an eddy of language, race, and religion ; but Quebec is overwhelmingly French and Roman Catholic, and in the parishes dependent upon it, around the city and lower down the river, the old French Canadian life still survives.

The city of Quebec has not kept pace with the growth of the country. The population at the census of 1891 was 63,090, an increase of only one per cent during the previous ten years. Several causes have contributed to this. The adoption of iron in place of wood for shipbuilding destroyed a very large industry. Changes in the timber trade also seriously affected the city. In former years nearly the whole export trade in timber went by Quebec ; now comparatively little goes that way. Formerly the timber went down the river in rafts to Quebec ; now the business is done directly from the mills, and the lumber is sent to the nearest shipping port by rail. The

trade used to be chiefly done with Great Britain; now the lumber is largely sent by rail across the border to the United States. Even the lumber for Great Britain is not always loaded at Quebec. It may be loaded at Montreal or even Three Rivers. Quebec, as a shipping port, has been injured by the unreasonable exactions of societies of ship-labourers, who have unwittingly conspired with the general tendency of trade to send the ocean vessels westward to the port nearest to the point of production. Therefore, as the channel of the river was deepened, the trade moved past Quebec to Montreal, and the rapid growth of Montreal as a manufacturing and railroad centre made it, rather than Quebec, the chief distributing point. Causes such as these have tended to depress the trade of Quebec, beside the fact that the most enterprising merchants always centred at Montreal. In former years the garrison contributed a great deal to the life and gaiety of the city, and kept it in touch with English society. That phase has passed away, and, with the change in trade, the English merchants moved westwards, and do the business of the country from Montreal and Toronto.

Quebec still has the trade of the lower St. Lawrence, and, of recent years, some important manufacturing industries have settled there. The tanning business and the manufacture of boots and shoes have been largely developed. A large cotton factory has been established at the falls of the Montmorenci, where cotton cloth is made solely for export to the east. There is at Quebec a ready command of labour, and the French Canadian "habitants" are cheerful, contented, and skilful work-people. The trade of the Lake St. John district and the Saguenay valley must always centre at Quebec, and these districts are developing fast. The chief towns below Quebec are

on the south shore, where the greater part of the fertile land is situated, and are situated mostly at the mouths of the rivers. New Liverpool is almost a suburb of Quebec. It is at the mouth of the Chaudière, a river 110 miles long, draining an area of 2500 square miles. It rises in Lake Megantic on the frontier, and a short portage connects it with the Kennebec. Gold has been found in considerable quantity in the gravel of this river. A few miles from Quebec it falls in a picturesque cascade 130 feet in height. At St. Thomas the Rivière du Sud discharges, after winding through a fertile and level country. At the mouth of the Rivière du Loup is Fraserville, the largest town below Quebec, and growing fast by the establishment of manufactures. Here also is a very pretty fall.

Along the north shore is a continuous series of cascades, as river after river contributes its quota to the St. Lawrence. The Montmorenci falls are a cloud of foam arching over a precipice 265 feet high. The falls of St. Anne de Beaupré and of St. Féréol are a series of cataracts, one of which is 130 feet high. It will be impossible to refer in detail to the numberless points of picturesque interest around Quebec. Thoreau (*Yankee in Canada*, p. 54) remarks:

“It was evident that this was the country for waterfalls; that every stream that empties into the St. Lawrence, for some hundreds of miles, must have a great fall or cascade on it, and in its passage through the mountains was, for a short distance, a small Saguenay with its upright walls.”

Below Quebec the valley of the river on the south side as far as Kamouraska is fertile and rich. It is the heart of the old French colony, where the manners and the language of old France are best preserved from

admixture with English. In large portions of this country English is seldom heard. A stranger would suppose he was in the centre of Normandy. On the river bank is a long continuous village: for the concessions were deep with only a narrow front on the river, because in the early days the rivers were the only highways. It has been said, with little truth, that the French of Canada is a *patois*. It is as much of a *patois* as the French of Normandy is a *patois*, and no more. It is the French which was spoken in that part of France before the Revolution, and kept up by the clergy, who were always an instructed class, and retained their influence over the people. English is not spoken in the same way over all the United Kingdom, but no one speaks of a Dublin or an Aberdeen *patois*, or for that matter, of a London *patois*. Canada was settled from Normandy, Brittany, and Saintonge long previous to the French Revolution, and after the conquest there was little communication with France. Revolutionary principles and actions opened a wide gulf between the monarchical and Catholic colony and the French Republic, consequently many old French words continued in use. The physical and social conditions of a new country introduced some new words, and some words have been adopted from the English. The pronunciation of the vowels among the country people is broader than now at Paris, and the changes in recent years in the spoken language of the capital have had little effect in Canada, but cultivated French or English people speak their language very much alike wherever they are. The literature of French Canada is very extensive, and has now a place in France. The power of literary expression of the French of Canada is very remarkable. It may or may not be common elsewhere for statesmen to speak fairly well in a language not their own, but in Canada there are statesmen born

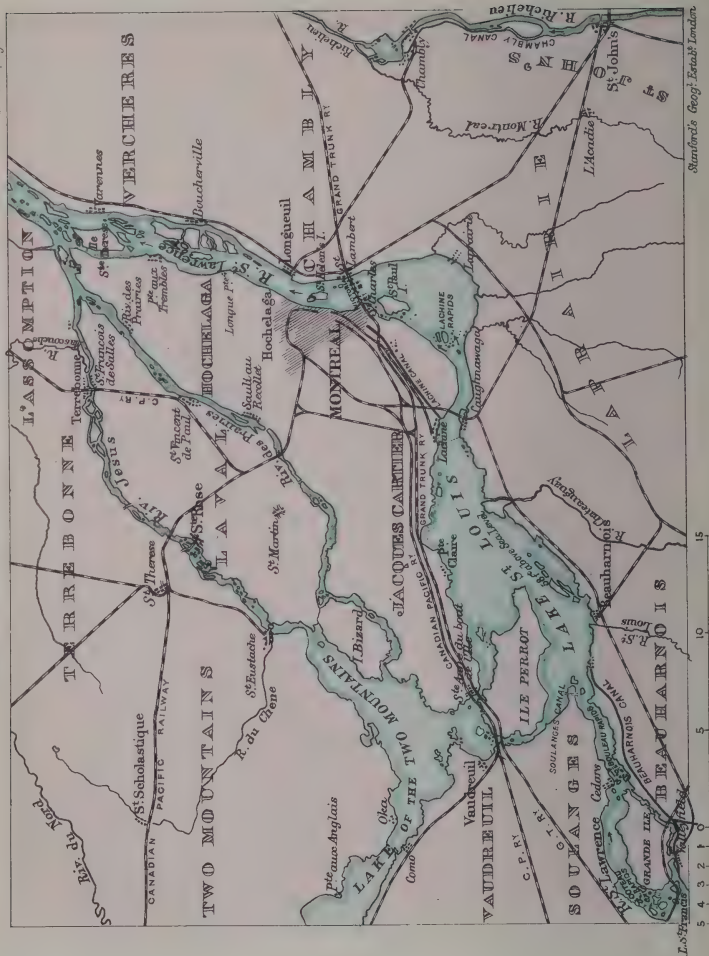
in the French country and educated in the French-Canadian colleges, who can not only arouse the enthusiasm of their own people, but while speaking, will suddenly turn, and, with faultless and ready eloquence, display a command over the English tongue which is possessed by very few of the English themselves.

The city of Quebec is the centre of French Canada, as before remarked, and Laval University is the heart of the city of Quebec. It perpetuates the name and the memory of François de Laval-Montmorency, the first bishop of Quebec, who, turning his back upon the advantages of an almost princely lineage, spent his life in an outpost in the western wilderness and built the foundations of the Roman Church deep and solid in the new world. The University buildings at once arrest the attention of a traveller, for they are the most prominent objects on the cliff dominating the lower city. The University has also a large branch at Montreal with faculties in both cities of Theology, Medicine, Law, Literature, and Science. The teaching staff consists of 47 professors, and the students, in the present year, 1897, are 282 in number. The University is founded on a special charter of Her present Majesty, and a special Bull of Pope Pius IX. Sixteen French-Canadian colleges throughout the province are affiliated with the University. In this institution the activity of the great bishop still works for his people. He founded the Seminary of Quebec, and in 1852 the Seminary founded the University.

Quebec, being the seat of government for the province, has very large and handsome legislative buildings. As the chief fortress of Canada, the city is crowned by a series of works most formidable in appearance, and armed with cannon most formidable in number. In their day,

THE ENVIRONS OF MONTREAL.

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Stanford Geog. Ensl. London

these works have arrested the tide of invasion ; but their day is over. Still they are picturesque and noble, stretching along the heights, and the heights may at any time be adapted to the latest methods of defence. From the heights of the citadel may be distinguished, on the south side of the river, three forts designed on modern principles for the defence of the city ; but they are not armed.

Quebec in old days was far more important as a shipping port than now. Before the railway age arrived to disturb the natural channels of trade, and before iron shipbuilding superseded the wooden vessels, it was one of the great ports of the world. The first vessel which crossed the Atlantic Ocean propelled by steam was the *Royal William*, launched at Quebec in 1831. She crossed to London in 1833. The port possesses a graving dock at Lévis, 495 feet long and 100 feet wide, with $25\frac{1}{2}$ feet depth of water on the sill at high tide. Another important work is the Louise Embankment, inclosing a dock 40 acres in extent, and a tidal dock of 20 acres.

Trade.—The exports of Quebec in the year ending June, 1896, were in value \$5,423,960, and the imports amounted to \$3,006,629. The number of vessels cleared was 263, and the tonnage was 368,358 tons.

7. Montreal and the Surrounding Territory

Few cities in the world are so advantageously situated as Montreal. It is at the head of navigation on the St. Lawrence, and at the confluence of its greatest tributary, the Ottawa. It is the point where the great river approaches nearest to the Atlantic Ocean on the New England coast, and it is near the intersection of a great north and south valley where the Hudson and Richelieu waters are separated by a water-parting only 120 feet



Montreal, Quebec.

MONTREAL.

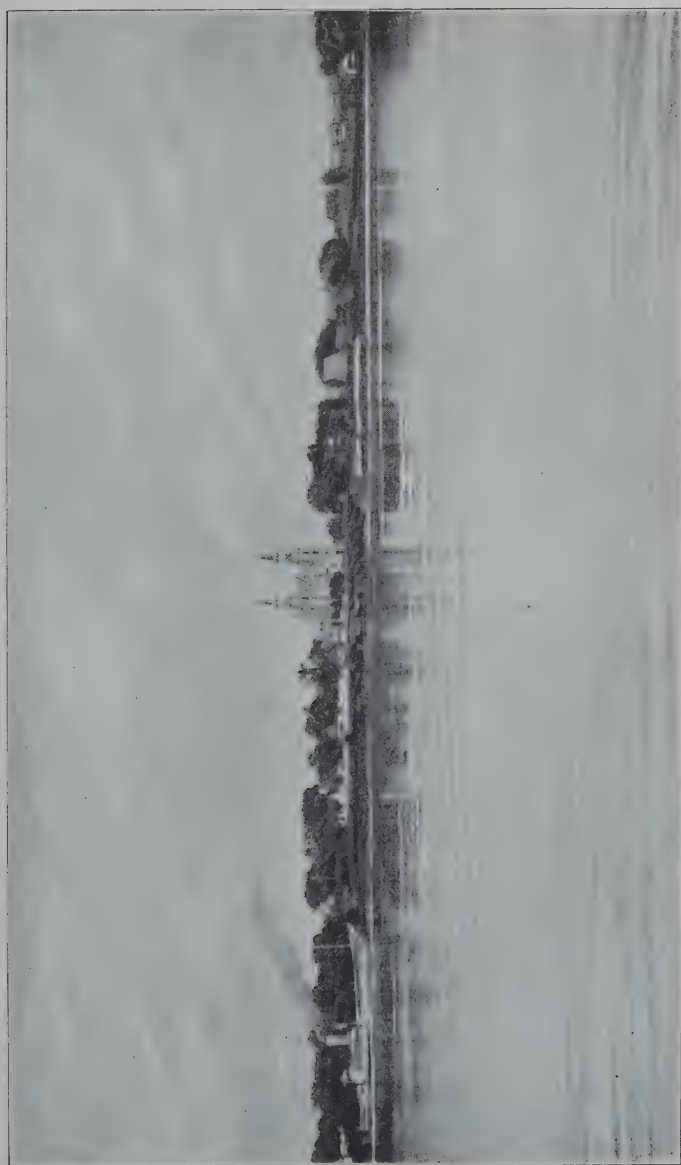
high and 20 miles wide. It is the centre of one of the most fertile valleys in the world, and, though a thousand miles from the open ocean, is not quite 12 feet above the level of the tide. It is the foot of the most extensive system of inland navigation in the world, and it has of late years become as important a centre of railways as it always was of waterways. All of the converging valleys bring business to the city, forming a steady volume of local traffic, undisturbed by the fluctuations of foreign markets.

West of Montreal is the valley of the Ottawa, and that river flowing from the west strikes the St. Lawrence flowing from the south-west at a very acute angle, and an archipelago of islands is formed at their confluence, of which the Island of Montreal is the centre and chief. The impact of the Ottawa water presses the water of the St. Lawrence to the southern shore, so that, strictly speaking, the islands are in the mouth of the Ottawa; for, opposite to the city of Montreal the line of separation between the dark water of the Ottawa and the clear blue of the St. Lawrence may be plainly seen, and the rivers do not commingle until tide water is reached. The Ottawa in its lowest reach expands into a beautiful lake—the Lake of the Two Mountains. Rigaud Mountain, one of the masses of eruptive rock before spoken of, is at the head of the lake, and Mount Calvaire (an island of Laurentian rising in the midst of the Cambro-Silurian plain) marks the foot of the lake where it turns to the north-east to follow the general course of the St. Lawrence valley. The St. Lawrence expands into Lake St. Louis just above Montreal. It draws together to a little less than a mile in width before throwing itself over the Lachine rapids, and immediately expands again to form a broad bay, five miles wide, at Laprairie, and then flows

past the front of the city with the width of a mile and a half to two miles.

The Ottawa river flows out of the Lake of Two Mountains in four channels, two north and two west of Montreal. The most western is unnavigable, and flows between the mainland and Isle Perrot; the main channel flows between Isle Perrot and the Island of Montreal. Here are the celebrated St. Anne's Rapids of Moore's Canadian boat song. A single lock enables vessels to pass. In rear of the island of Montreal the Ottawa is called the Rivière des Prairies, and separates it from Isle Bizard and Isle Jésus, and north again of these latter islands the most northerly mouth of the Ottawa separates them from the mainland. This branch is known under various names: Rivière Jésus, Rivière St. Jean, or Rivière Terrebonne, or sometimes simply as the Ottawa. The largest body of Ottawa water flows in front of Montreal, but rafts of timber for Quebec pass down in rear by the Rivière des Prairies, where the rapids are easier to run. All these streams unite at the lower end of the Island of Montreal in a maze of wooded islands which completely obscures the confluence. Mount Royal rises in rear of the city about 700 feet—a mountain—because it is the only elevation in this level and fertile plain—a central eminence from which the very garden of the St. Lawrence spreads to all points of the compass, robed in summer with every colour in which bountiful Nature adorns her most favoured localities, until the horizon is closed by the blue hills of the distant ranges bordering the valley.

Below Montreal, to the north-east, the St. Lawrence river flows in a broad stream through a wide and fertile valley. On both sides of the river stretches a continuous line of farms and villages, and about every nine miles,



VARENNES, NEAR MONTREAL, A TYPICAL SCENE ON THE UPPER ST. LAWRENCE.

from parish to parish, there is a group of ecclesiastical buildings, a church and presbytère, and often a convent school, or some monastic building, showing that the country is French and Roman Catholic. The banks of the river are from 40 to 100 feet high, cut by the river into the plain. Sorel, at the mouth of the Richelieu, is 45 miles from Montreal. The Yamaska and St. Francis fall in very near, and the river expands into Lake St. Peter, the shallowest part of its course. Through the flats of the lake a broad and deep channel for ships has been dredged, and here the river meets the tide.

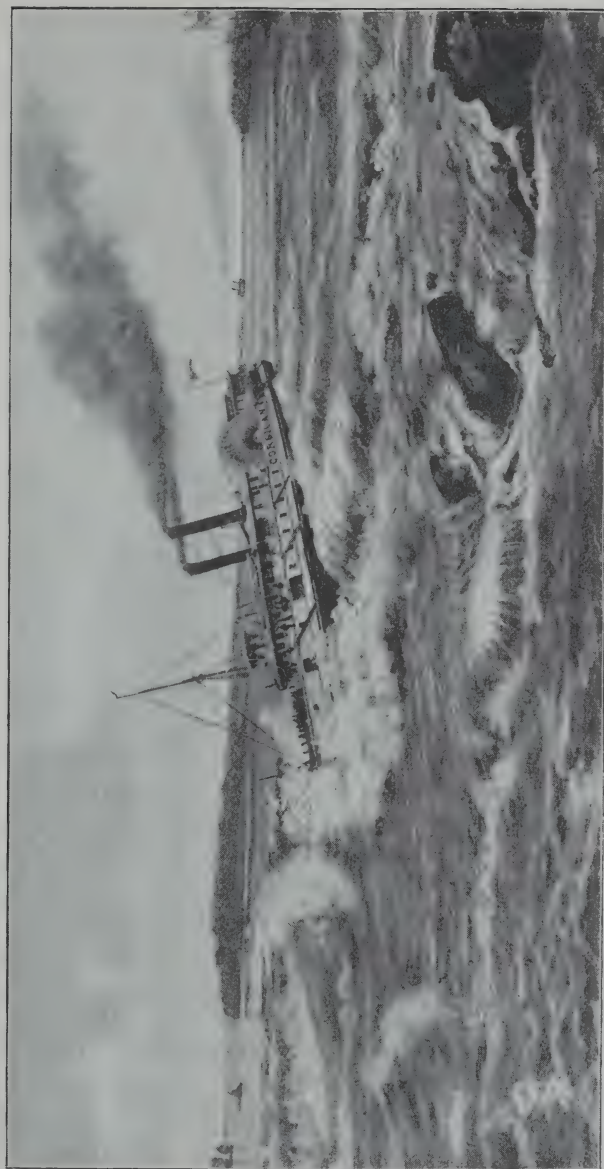
Le Nord.—North of the level country near Montreal, in the blue hills seen from the mountain, is a region generally called "Le Nord." It is in the counties of Joliette, Montcalm, Terrebonne, and Ottawa, and is being colonised from the older settlements. While the valleys are being cleared for farms, the mountains and lakes are becoming the resort of pleasure-seekers from the cities. The whole region is ideal Laurentian country; for it is in the heart of the Laurentides. The lakes are beyond counting, and they abound in trout. The country is all wooded with mixed deciduous and coniferous forest, and is threaded by numerous streams. There are some stirring little manufacturing villages in this region of abounding water-power, and they bring to Montreal a constant and steady trade.

The South.—South of Montreal is the Richelieu valley. The river of that name is the only important tributary falling into the St. Lawrence from the south. It discharges Lake Champlain and Lake George in the United States by a stream 81 miles long, from Rouse's Point on the frontier to Sorel on the St. Lawrence. It is navigable by large river steamers from Sorel to Chambly, with the assistance of only one lock $\frac{1}{8}$ of a mile long at St. Ours. At

Chambly is the mouth of a canal of 9 locks, with a depth of 7 feet, built to overcome a series of rapids interrupting navigation for 12 miles. By this canal a rise of 75 feet is accomplished, and from St. John's there is uninterrupted navigation to the head of the lake at Whitehall, in New York. From thence is a canal to the Hudson, and by this route much heavy freight, such as coal, raw sugar, and lumber is exchanged. The Richelieu valley at the beginning of the century was the granary, not only of Canada, but of the neighbouring states of the Union. The banks are low, and the plain is as level as a table. The soil is rich, and although it has been impaired for wheat by overcropping in a long series of years, it is now a most productive country for mixed farming. The valley of this river is the old highway of invasion, and in early times the Richelieu was called *Rivière des Iroquois*, because of the irruptions of the Mohawks by that route. The French and English armies traversed it incessantly in attack and defence during the Colonial wars, and upon its banks some of the manor houses of the old French "seigneuries" still survive. It was originally settled by men of the Carignan-Salières regiment, who came out with the Marquis de Tracy in 1665, and the names along the banks are those of officers of the regiment who received the first grants, such as M. de Sorel, M. de St. Ours, M. de Chambly.

To the south-west of Montreal the St. Lawrence valley extends up to the great lakes, and, although from Lake Ontario to Point au Baudet is politically part of Ontario, it is convenient to consider it in connection with the canals which terminate at Montreal. The St. Lawrence leaves Lake Ontario under its own proper name and passes through a wilderness of rocky, wooded islets, known as the Thousand Islands (though more than a

thousand have been counted) where after a sharp turn the Laurentian rocks make a long reach southward to connect with the Adirondack mountains, a detached outlier of the Laurentian system in the state of New York. Through 40 miles of beautiful scenery the river flows among parks and country houses and villas and wild rocky islets, some just large enough to hold a clump of trees. At Prescott commence the rapids of the St. Lawrence and the magnificent series of canals built to overcome them. These are used only in ascending the river. The largest passenger steamers shoot all the rapids in descending, and this experience, so novel and unique, is one of the attractions of Canadian travel. The first in the descent is the Galops rapid, avoided by a canal, $7\frac{3}{4}$ miles long. Then follows the Rapide Plat, 4 miles, with its canal. A canal, the Farran's Point Canal, only $\frac{3}{4}$ of a mile long, follows, and then succeeds the rapid of the Long Sault, $11\frac{1}{2}$ miles in length, which is overcome by the Cornwall Canal. There are long reaches of quiet water between these rapids. The Long Sault is the most picturesque and the most exciting of the upper group. Opposite Cornwall the line of 45° strikes the river, and the banks on both sides become British. At the point of contact is St. Regis, an Iroquois reserve; Cornwall is a manufacturing town with large cotton mills and a large paper mill. There the river widens into Lake St. Francis, and for 38 miles is a quiet stretch between monotonous low banks of farming lands. From Cornwall the southern side of the river belongs to the province of Quebec, but Ontario continues on the north side until the village of Coteau du Lac indicates by its name that the boundary between the English and French provinces has been passed. At Coteau Landing the St. Lawrence gathers up its strength



Nothman, Photo.

STEAMER "CORSIKAN" RUNNING THE LACHINE RAPIDS.

for another plunge, and the Coteau Rapids, the Cedars, and the Cascades follow each other in quick succession. The run down these rapids is very exciting, for the water is much broken. All three are avoided by the Beauharnois canal, $11\frac{1}{2}$ miles long—the only one on the south side of the river.

When the policy of deepening and enlarging the canals was adopted, the cost of making a new canal opposite Beauharnois was found to be not much in excess of enlarging the old one, and a new canal is now being built on the north side of the river. As the Cascades terminate, the most westerly branch of the Ottawa falls in, and the river expands into Lake St. Louis for 15 miles, and receives the main body of the Ottawa, then it contracts again to fall 45 feet through the Lachine Rapids, which are overcome by the Lachine canal, $8\frac{1}{2}$ miles long. This is the last in the series, and at its mouth in the harbour of Montreal the river steamers may run alongside of the largest ocean vessels.

This very interesting stretch of inland navigation is unequalled, not only because of the immense volume of the descending river, but because of the magnitude and costliness of the canals and the large size of the vessels which may pass through them. The following table will be of use to show at a glance the main facts regarding them. Sea-level is taken from the head of the tide in Lake St. Peter. Lake Ontario is 240 feet above that level. At Lake St. Francis, the foot of the first group of rapids, the river has fallen to 142 feet. At Lake St. Louis, the termination of the second group, it has fallen to 58 feet, and the harbour of Montreal is 11.75 feet above tide-water.

TABLE OF DISTANCES AND LEVELS FROM POINT TO POINT FROM HEAD OF TIDE AT THREE RIVERS, ON LAKE ST. PETER, TAKEN AS 0.

To	Distance in Miles.	Rise in Feet.	Obstructions.	Canal.	Length of Canal in Miles.
Montreal . . .	86·00	11·75			
Lake St. Louis . . .	8·50	44·75	Lachine Rapids	Lachine Canal	8·50
Cornwall on Lake St. Francis	59·25	133·50	Cascades Cedars Coteau	Beauharnois Canal	11·25
Prescott on St. Lawrence River	51·25	45·75	Long Sault Rapide Plat Galops Rapids	Cornwall Canal Farran's Point Canal Rapide Plat Canal Galops Canal	11·50 0·75 4·00 7·60
	<hr/> 205·00	<hr/> 235·75			<hr/> 43·60

The total distance from head of tide to Prescott is 205 miles, of which 43·60 miles in the aggregate is broken water overcome by canals, Montreal being at the foot and Prescott at the head. The difference in level is 235·75 feet, of which 206·50 is overcome by six canals with an aggregate of twenty-seven locks.

While these pages have been passing through the press the Government has announced its intention to complete by the spring of 1899 the deepening of all the St. Lawrence canals to a uniform depth, and when the enlargement now going on is completed, the width of the locks will be 45 feet, the length 270 feet, and the depth of water on the sills 14 feet.

The City of Montreal

This beautiful city is the commercial capital of the Dominion, for there are the head offices of the greatest financial institutions and the greatest railways, and there is the point of contact between the ocean and the great

central plain of the continent. From 1841 (the date of the union between Upper and Lower Canada) to 1849, it was the political capital; but the atmosphere of politics was not congenial to the inhabitants, for in the latter year some excitable hot-heads set fire to the parliament buildings, with a vague idea that they might, perchance, burn a Bill to which they took great exception. The legislature objected to being burned out for trivial causes and removed to Quebec and Toronto alternately, and, after seven years of wandering, definitely settled, in 1866, at Ottawa. In that way Montreal lost the seat of government and the Bill was not burned after all.

In the historical sketch preceding this chapter, the city is shown to have been the result of an outburst of religious enthusiasm. Though no other site on the continent excels it as a centre for trade, it was not a trader who founded it; though no other point equalled it as a central point for geographical exploration, it was not an explorer who founded it. A brave but humble-minded and religious soldier and two meek and timid women are the hero and heroines of the early city. It was the city of a dream—a bright and stainless flower of the Roman Catholic faith. The world soon invaded this ideal home of devotion, and the geographical position of Montreal soon gave it the control of the fur trade—the one great commercial interest of early days. In the narrow streets of the old town black-robed ecclesiastics and silent nuns in sober uniform glided about on their errands of charity and mercy, but the soldiers and noblesse were gay with the Paris fashions of the last ship of the season, the *coureurs de bois* swaggered in half-civilised dress; and on the outskirts of the town Indians camped, from the farthest regions of the west, decked in all their savage finery of paint and feathers.

Those days passed away, and there came to Montreal, under the English régime, another set of men, mostly from Scotland and many from the Highlands. These were the enterprising and daring fur traders of the North-west. They united with their French predecessors and availed themselves of their knowledge, but they overpassed their discoveries, and chief among them was Alexander Mackenzie, a quiet Scotch youth who came out to Montreal as a clerk in Gregory's counting-house, and who carried the British flag to the Polar Ocean and the great South Sea. That age also passed away, and the era of steam opened first on the St. Lawrence, for the first river steamboat (after Robert Fulton's experiment in 1807) was built in 1809 by the Molsons at Montreal. Then came the era of canals, and the steamboats gradually swarmed from Montreal over the western waters; for Montreal held the key of the whole valley. In 1856 the first line of ocean steamers was established by the skill and energy of the Allans. Then followed the railway age. The Grand Trunk Railway paralleled the water-courses and spread to all the larger cities; but, in 1886, the destiny of the city was accomplished, for the Canadian Pacific Railway in that year completed its stupendous task, and Montreal once more held the keys of the gateway from the Atlantic to the great central plain and over the passes of the Rocky Mountains to the Pacific Ocean, the *Mar del Zur* of the dreams of the Elizabethan mariners. Champlain sought for the passage in his adventurous voyage up the Ottawa, Jolliet and Marquette sought it in their lonely wanderings, La Salle thought he had found it, La Verendrye followed the path as far as the mountains, Alexander Mackenzie lifted the veil of the west and north, and, in less than one hundred years later, the North-west passage was achieved in the great railway which is the shortest passage from ocean to ocean.

The city is built upon natural terraces rising from the river. It is underlaid by the Trenton limestone, and through the level beds of this formation the mass of eruptive rock which forms Mount Royal in rear of the city has forced its way, tilting up the limestones immediately surrounding. Extensive quarries of limestone are found near the city, and the substantial way in which the buildings, not only public buildings but private residences, are built is due to the accessibility of these quarries. The terraces are ancient sea margins formed by the clay and sand of the Pleistocene age. One well-marked terrace is at Dorchester Street, another is at Sherbrooke Street. This last is 120 feet above the sea. Other sea margins may be traced on the flanks of the mountain at heights of 220, 386, and 440 feet, and the crest of the mountain itself is 700 feet above the sea.

The population of the city is given as 216,650 in the census of 1891, having increased 39 per cent in the previous decade. Since that date the limits of the city have been extended, and the population is now probably close upon 275,000, of whom a little more than one-half are French in race, and about three-fourths are Roman Catholic in religion.

Montreal is one of the best built cities in America, and one of the most convenient for residence. It is clean and well drained; electric cars perform a rapid and efficient service, not only through the city and suburbs, but to all parts of the island, and there are good theatres and frequent musical entertainments and other amusements. Being a university city, there is an element of science and literature in its society, and there is an Art Gallery, which, if not equal to those of the great United States cities, is at least a creditable beginning. In the summer the wharfs and canal basin are crowded with inland steamers from ports on Lake

Superior to ports on the lower St. Lawrence, and with sea-going steamers from the Atlantic provinces. Beside them in the harbour lie ocean liners from London, Liverpool, Glasgow, Hamburg, Antwerp, and many other European ports. A large fruit trade brings vessels from the Mediterranean and the West Indies. The great sugar refineries bring vessels with raw sugar from the East and the West Indies, and from the Brazils, and the large cotton mills, tobacco factories, rolling mills, and manufactures of all kinds draw raw material from all parts of the world. This shipping finds its return freight in the produce of the farm, forest, and factory. Railway trains run along the wharfs at night, for the port is lighted by electricity, and the vessels may unload by day and night and thus have quick despatch.

Then Montreal is a great terminal centre of railways. It is the terminal point of the Central Vermont, the Delaware and Hudson, and the Adirondack and New York railways to the cities of New York and Boston. While these pages are passing through the press, the Government has decided on extending the Intercolonial Railway from Levis opposite Quebec to Montreal. It is, as it always was, the great highway to the west. Trains leave daily for the Pacific coast, direct to Vancouver without change of cars, and to all points in the Maritime provinces, and to all points in the west and south. The central offices of the Canadian Pacific Railway and the Grand Trunk Railway are at Montreal. There are services several times daily for the great cities of the United States and of the Dominion, and there are convenient services for all the neighbouring country.

The city is well supplied with parks and pleasure-grounds. The whole of Mount Royal is a park with pleasant drives affording magnificent prospects over the

central plain. The island of St. Helen's is another park, and the natural beauties of these places have been heightened by the art of the landscape gardener.

The chief cities of the other provinces lean on their respective provinces for support, but Montreal gives and does not receive. The chief part of the taxes of the province of Quebec are raised there, but the provincial government spends nothing on the city. It has immense hospitals and universities, and charitable institutions without number, all supported solely by the bounty of the citizens.

Montreal is more cosmopolitan than the other cities in Canada. There the French and English races, languages, and religions meet in a swirl in which neither predominate exclusively. The great trading and manufacturing interests are mainly English, but there are also many large French houses and factories. The magnitude of the business and shipping interests of the city is shown in the tables appended below. It is the fourth largest port in North America for the shipment of grain, the order being, San Francisco, New York, Boston, Montreal.

Montreal is also a great centre of education. The McGill University has 93 professors and lecturers and 1059 students. Its buildings are large and fitted with every appliance for teaching, and situated in the midst of spacious grounds. The Montreal branch of Laval University has 70 professors and 733 students. There are large classical colleges under the care of the Seminary of St. Sulpice and the Jesuit Fathers, and theological colleges for Roman Catholics, Anglicans, Presbyterians, Methodists, and Congregationalists. All these are housed in handsome buildings of stone.

Then there are the communities of nuns of the Roman Church,—the sisters of the congregation of Notre Dame,

numbering nearly 1000 professed sisters, and teaching over 20,000 girls all over the Dominion and in many cities of the United States. This is the institution founded by Sister Marguerite Bourgeoys, gentlest of holy women, in the year 1653. Then the cloistered nuns of the Hotel Dieu—the Sœurs Hospitalières de St. Joseph—founded by Jeanne Mance, whom only the consciousness of a divine mission supported in those early years when she and her assistants cowered behind the plank doors of the first hospital at the sound of the Iroquois war-whoop in the woods around. Now the great hospital on the mountain side is the scene of their activities, and volunteers from their ranks manage the lazaretto at Tracadie without putting it through the newspapers as if it were a wonderful thing to do. Then there is the great institution of the Grey Nuns, with nearly 400 sisters, whose branch establishments reach into the Polar circle along the Mackenzie river. This was founded by a Montreal widow in 1755; and there are the Sisters of Providence, with 500 sisters and with branch houses all over the Dominion. All these are active workers, nursing, and carrying on asylums for the blind, aged, or helpless, and all of them originated in Montreal.

The Protestant charities of Montreal are very numerous, though not branching over the country, for the Protestant religions have not the centralised organisation of the Roman Church. The Victoria Hospital is the gift of Sir D. A. Smith and Lord Mount-Stephen to the city; the General Hospital is an institution of the Protestant citizens, supported by their annual contributions and by smaller endowments. Both are noble charities—of citizens of Montreal, not of governments; for the citizens of Montreal are immensely in earnest when they undertake anything; they do nothing in a half-hearted way,

whether they found a line of ocean steamers, undertake to build a transcontinental railway, or to burn out a parliament for the sake of killing a bill they object to. There is nothing monotonous in Montreal or dull about its citizens, and this was the character of the people always in French as in English days. Iberville and Biencourt, the two greatest in a family of captains; Du l'Hut and Lacorne de St. Luc, chief among Indian fighters; La Salle and Alex. Mackenzie, explorers; the old North-westerners as fur traders; the Allans as steamship owners; George Stephen and Donald A. Smith as railway men—there never was a time when Montreal had not men to bear up her fortunes through all vicissitudes.

Montreal is also a city of churches. The Protestant churches are numerous: all are substantially built, and many of them beautiful; and the Roman churches are the largest on the continent. The parish church of Notre Dame will hold 10,000 people. It is 225 feet long, 134 feet wide, and its main towers are 227 feet high. The Cathedral is a reproduction of St. Peter's at Rome, on half its scale. It is 333 feet long and 222 feet wide.

The St. Lawrence is bridged by two important bridges at Montreal. The Victoria bridge of the Grand Trunk Railway is well known as the greatest tubular bridge in the world. It is 9184 feet long, and the tubes have a span of 242 feet each, except the centre tube, which is 330 feet. It cost \$6,300,000, and took six years to build. It was formally opened in 1860 by the Prince of Wales, and was considered to be the eighth wonder of the world. Since then engineering science has advanced beyond the tubular principle, and it has been decided, while these pages were passing through the press, to replace the tubular

superstructure by an open lattice-work bridge. The contract has been made and the work of renewal will be finished in twelve months. The foundations remain unaltered, for the piers were massively built and will need only to be lengthened six or seven feet by building upwards from the shoulders of the angles of the cutwaters. The present bridge has only a single track and has long been utterly insufficient for the traffic. The new bridge will have double tracks for steam and electric cars and facilities for vehicles and foot passengers. The spans, as the old piers are used, are of necessity the same. Not far off is the Canadian Pacific bridge, a trestle bridge on the latest plan, which cost \$1,000,000 and took only one year to build.

The Port of Montreal

Montreal was always an ocean port, but not for the largest vessels. The St. Lawrence river in widening to form Lake St. Peter loses very much in depth, and unless steps had been taken to deepen the channel of the river, the great increase in the size of sea-going vessels would have relegated Montreal hopelessly to the position of an inland town; for no vessel drawing more than 11 feet could pass up to Montreal. The legislature undertook in 1841 to deepen the channel, but abandoned it, and it was then that the character of the people once more asserted itself. They undertook the work in 1850 at the charge of the port, and by the year 1853 the channel was deepened to 15 feet 3 inches, and the first ocean steamer arrived at Montreal. Since then the work has been vigorously pressed, but as fast as the channel was deepened the size of the ocean steamers increased. The citizens were not discouraged. They deepened the water

to 16 feet, then to 20 feet, then to 25 feet, and lastly to its present depth of $27\frac{1}{2}$ feet, so that now any ocean steamer which can enter the harbours of New York and Boston can steam up to the wharfs of Montreal. Then it was found that the dues charged upon the trade of the port for this service were a burden on the whole trade of the country, and, in the year 1888, the Dominion Government assumed the debt, and placed the port of Montreal on an equality with other ocean ports. The minimum width of the channel is 300 feet, and at curves where more room is necessary it widens to 550 feet. It is buoyed throughout and lighted like a street.

The harbour of Montreal is not disfigured by ugly buildings on the water's edge. The whole river front is public property, and a broad street faced with quays of stone extends along the river. The quays are supported by a *revêtement* wall of stone, and ramps lead down to the wharfs below. The St. Lawrence, like all rivers flowing towards the north, is liable to flood in the spring if the ice breaks up on its upper waters before the river is clear below the city. Then the river struggles mightily, the water backs and rises, and the pressure increases until at last what is called a "shove" occurs. So suddenly does it come, and so quickly is it over, that many old residents of the city have never seen it. The river throws off its icy encumbrance, bursting up the level ice and piling it in immense heaps. The whole mass for miles and miles is for a few minutes in motion, and then the river appears in broad channels and expanses, having thrown up against the banks or over the shallows huge masses of ice-blocks piled one upon another. These are soon pierced by the strong rays of the spring sun and crumble in long needles of crystal, and are undermined by the swift current which bears all away to the sea.

While the river is gathering force and backing for an effort the water rises, and once in every ten or fifteen years flows over the *revêtement* wall and floods the city. Although this has seldom occurred, it has caused heavy loss when it has happened, and hence a breastwork high above the utmost reach of the river is built along the edge of the quay to higher land above the city and prevents a recurrence of these inundations. Many seasons pass when the ice moves away quietly, but when it holds firmly below the city, and the lake and river ice comes down from above and is packed by the current against the firm ice, the loose floes dip under and gradually choke the channel; it is then the river rises to its work, and the very remarkable phenomenon called a "shove" is witnessed.

As the trade of the port increased, and large steamships completely displaced the sailing vessels of former days, great changes were made in the harbour, and the works are still in progress. An immense guard pier is being extended from the outer end of the embankment of the Victoria bridge down stream for a length of one mile and a third. In this way the upper portion of the harbour will be made into an immense slack water basin, and, as the whole discharge of the Lachine Canal falls in at the upper end, the water in the basin will be changed at least twice a day. In this way the harbour front will be protected from the current, and in spring from the scour of the ice and from "shoves" in time of flood. Within this basin are to be four pier wharfs from 1000 to 1550 feet long. The lower part of the harbour is an extension of the present shore wharf to Hochelaga, and at the lower end four pier wharves 500 to 850 feet will project into the river at an acute angle. The result of these changes, when all complete, will be that the wharfage

accommodation, which, in 1893, was 5.02 miles, will be extended one-half, and the port will be able to meet all the requirements of a rapidly increasing trade. The length of the wharf front at the commencement of the present year (1897) was 5.88 miles.

It remains now to give in tabular form a succinct statement of the main items of the trade of Montreal. These are made up to the end of the year 1896. An inspection of the tables, item by item, will convey a clearer conception of the business of the port than a long description. The items given are the chief items only. A great deal of business is done beyond these. It may be observed here that, in 1896, the port opened on April 26 and closed on December 19.

SHIPPING BUSINESS OF THE PORT OF MONTREAL FOR THE YEAR
ENDING DECEMBER 31, 1896

	Vessels.	Tonnage.
Number of sea-going vessels arrived . .	709	1,216,468
„ inland vessels arrived . .	4832	1,004,117
Total .	5541	2,220,585

Of this number 668 vessels were built of iron and their tonnage aggregated 1,200,467 tons, showing how completely the trade has passed away from sailing vessels. The inland vessels are from the great lakes and inland waters of Canada, and come down through the St. Lawrence canals or come up from the lower river and its tributaries.

CHIEF ITEMS OF EXPORT FROM THE PORT OF MONTREAL FOR THE
YEAR ENDING DECEMBER 31, 1896

Lumber to Europe,	board measure feet .	219,032,178
„ the river Plate		7,790,166
Total .		226,822,344

Wheat, bushels	7,027,058
Corn „	6,778,896
Pease „	1,865,533
Oats „	2,631,785
Barley „	247,148
Rye „	351,627

Total bushels of grain	18,902,047
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Flour, barrels	772,126
Meal „	40,021
Eggs, cases	141,853
Cheese, boxes	1,722,051
Butter, packages	157,642
Apples, barrels	725,016
Cattle, head	96,448
Sheep „	76,520
Horses „	10,421
Hay, tons	12,507

The total value of exports at the port of Montreal in 1896 was \$49,160,364, and of imports \$45,900,270.

It would give an imperfect idea of the city to omit mention of its great manufacturing industries. The change of trade policy in England broke up the old channels of business, and for a few years the city staggered under the blow. In 1854 commenced the manufacturing era; there was, no doubt, some manufacturing done before, but with the great sugar refinery of the Redpaths a new departure was inaugurated. Manufactures of cotton, tobacco, boots and shoes, clothing, silk, iron, and many other things, followed in quick succession. A short table extracted from the census of 1891 will give an idea of the chief industries of the city:—

Boots and shoes, annual value of output	\$4,738,209
Cotton cloth	1,850,010
Rolling stock	7,063,404
Nails and tacks	218,100
India-rubber factories	1,398,000

Shirts, collars, and ties	\$1,505,550
Clothing	3,687,313
Rolling mills	1,815,949
Silk	460,000
Sugar refineries	13,563,100

The returns of manufactures of tobacco and liquor may be had from the Inland Revenue Reports. They are for the year ending June 30, 1896 :

Tobacco, lbs.	7,573,320
Cigars, number	41,359,825
Cigarettes, number	82,772,400
Malt liquors, gallons	3,433,637

The total value of the output of manufactured articles in the year 1890 was estimated as \$73,000,000.

Cities

Besides Montreal and Quebec, which are described elsewhere, the chief towns in the province are Hull, on the Ottawa river opposite the capital, a manufacturing town with large paper and lumbering mills, and a population of 11,265, having increased 63 per cent in the decennial census period; Sherbrooke, at the junction of the Magog and St. Francis river, with a population of 10,110, also a manufacturing town with woollen and cotton mills: St. Hyacinthe, on the Yamaska, population 7016, increased 30 per cent, a manufacturing town; Sorel, 6669, at the mouth of the Richelieu river, a centre for industries connected with building and repairing river steamers, increase 15 per cent; Valleyfield, on the Beauharnois canal, with cotton and paper mills, 5516, increase 41 per cent; Fraserville, on the Loup river, 4175, increase 82 per cent, and a number of suburban municipalities around Montreal and not yet annexed, into which various manufacturing industries are overflowing.

The total annual output of the manufactories of the province is given as \$143,398,880 by the census of 1891.

NOTE TO CHAPTER XI

The chief books of reference for the province of Quebec have already been indicated at the end of previous chapters. The following list of Reports by officers of the Geological and Natural History Survey will be found of use. It is arranged by districts to facilitate reference to any special locality.

QUEBEC

The Province generally—Geology of Canada, 1863—the large volume containing a summary of work done in previous years.

GASPÉ.

R. W. Ells, 1882-84; A. P. Low, 1884.

LOWER ST. LAWRENCE.

J. Richardson, 1869; A. P. Low, 1891; Abbé Laflamme, 1891.

EASTERN TOWNSHIPS.

J. Richardson, 1866; R. W. Ells, 1886-88, 1891-94.

SAGUENAY and LAKE ST. JOHN.

J. Richardson, 1870-71; W. McOuat, 1872; Abbé Laflamme, 1884, 1893.

CHAUDIÈRE DISTRICT.

A. Michel, 1866; Chalmers, 1895-96.

ST. MAURICE RIVER and VICINITY.

A. Webster, 1870; J. Richardson, 1871; N. J. Giroux, 1893.

OTTAWA COUNTY.

H. G. Vennor, 1874-77; J. Richardson, 1871; R. W. Ells, 1893-94; J. F. Torrance, 1884.

PONTIAC COUNTY.

H. G. Vennor, 1877; R. W. Ells, 1894.

LAKE MISTASSINI.

J. Richardson, 1871; A. P. Low, 1885.

BASIN OF JAMES BAY.

A. P. Low, 1888, 1893; R. Bell, 1895-96.

MAGDALEN ISLANDS.

J. Richardson, 1880.

CHAPTER XII

PROVINCE OF ONTARIO

History

IO ! VICTIS

While the voice of the world shouts its chorus,
its pæan for those who have won.
While the trumpet is sounding triumphant, and
high to the breeze and the sun
Gay banners are waving, hands clapping, and
hurrying feet
Thronging after the laurel-crowned victors—I stand
on the field of defeat.

Hold the hand that is helpless and whisper, "They
only the victory win
Who have fought the good fight and have vanquished
the demon who triumphs within ;
Who have held to their faith unseduced by the
prize that the world holds on high,
Who have dared for a high cause to suffer, resist,
fight—if need be to die."

IN the short histories of Acadia and Quebec which precede this chapter, we have seen the simple-minded Acadians clinging to their ideals and suffering for a monarchy which regarded them with cynical indifference. We have seen the French in Canada gallantly fighting to the last for a nation which oppressed and neglected them; and, as if to stamp upon the whole people of Canada a character above all others for courage and faithfulness, and to throw around the annals of the

entire Dominion a halo of loyalty and self-sacrifice, came the immigration of the United Empire Loyalists and opened a page of history so bright with all adornment of courage, fortitude, and devotion that the heart of every native-born Canadian beats with pride at the story.

The history of the province of Ontario commences late, but its roots are deep down in the character of the Anglo-Saxon race, in its love of liberty and of truth—of liberty in that gradual and steady evolution which has been the peculiar strength of the British race, and which is embodied in a political constitution

Where freedom broadens slowly down
From precedent to precedent

adapting itself to each generation without shock or strain, and venerable with the traditions and achievements of a thousand years. It is upon the character and principles of its first settlers that the province of Ontario has been solidly built, and these are expressed in one word "loyalty"—for these people were called "Loyalists."

The word "loyalty" has been regarded by "superior persons" with a kind of contemptuous pity, as if in this "enlightened" age it has no meaning. It counts for much in Canadian history, and must be taken into consideration by any one who wishes to understand the people of Canada. It is nothing other than a persistent determination to be faithful to the law of the nation to which one belongs and to the institutions in which that law is embodied. These slowly grow, developing and adapting themselves in accordance with the political ideals of each race; growing as a person grows, always changing, yet ever the same. The word loyalty involves an idea of duty, and is opposed to selfishness and wilfulness. It is altruistic, because it implies sacrifice for some principle or institution other than one's self and one's own will, and it is in politics

what religion is in morals. These United Empire Loyalists had an ideal of a world-wide Anglo-Saxon Empire, and the ancient historic monarchy of the mother-land was for them the central institution of their race, of which the king was the visible embodiment from generation to generation. The idea has been familiar to soldiers in all ages, for as the colours of a regiment, tattered and torn in many a conflict, are hung up in some cathedral, the associations which gathered around them are transferred to the new colours by a solemn ceremony. Loyalty is not confined to subjects, it is also the law for kings, and it was for disloyalty that the Stuart line was superseded. The United Empire Loyalists were in one respect happier than their French compatriots. They had warm friends in the grandfather and the father of our present sovereign, and, although few of the Loyalists had ever been in England, their devotion to King George III. was unbounded, and the king's good-will and constant thoughtfulness for them was manifested by many kind acts. The United Empire Loyalists saw no fault in King George III. It was not he who brought on the war, it was not he who mismanaged it, it was not he who was arrogant in one mood and cringing in another, it was not he who was ready to play into the hands of the enemies of his realm, and it was not he who deserted them in the day of defeat and distress. The grandchildren of the Loyalists attach no importance to the numerous histories, written after the event and full of after-wit, which strive to throw upon the king the odium of measures which others initiated and many of which passed Parliament either without discussion or after short and languid debate. Their knowledge of the events of those days is too intimate to be affected by the obsequiousness of historians on either side of the water. They have seen

the principles of their grandfathers vindicated in the great civil war for the American union, and vindicated by the descendants of the very people who drove their ancestors into exile—and they read now with kindly feelings the writings of the new school of American history, born after the civil war, which, with scholarly impartiality, dares to tell truths suppressed for one hundred years. The Loyalists, to borrow a phrase from Lord Mahon, “fixed their faith on the personal integrity and uprightness of the sovereign, and felt more reliance on his character than on that of any of his ministers.”

To discuss the causes of the American Revolution is foreign to the object of this volume. The people who settled Ontario and New Brunswick saw no just cause for it, and their descendants are of the same mind. A hundred years of misrepresentation and declamation have not obscured in their eyes the fact that there was no oppression on the part of the mother-country to justify a revolt. The lurid light of the war of secession has brought out truths enveloped for three generations in the mists of passionate prejudice, and calm scholars are re-writing the whole history from the beginning. The Loyalists did not approve of most of the measures of Parliament, and many, who were afterwards banished and proscribed as Loyalists, were leaders in constitutional agitation for the repeal of laws contrary, in their opinion, to the spirit of English institutions. They set their faces equally, however, against mob law; and tarring and feathering, or sacking their houses, or threatening their lives, did not change their views because, being Loyalists, they thought such methods disloyal; for loyalty is always opposed to impromptu laws enacted and enforced by self-appointed persons.

This character is not confined to their immediate

descendants. It permeates the whole people, and the desperadoes, who flocked to British Columbia in the first rush for gold, left in disgust a land "where a man could not shoot a Chinaman without being hanged." The principles of these early Loyalists have become an abiding force, reaching to the farthest corner of the Dominion, and carrying "the Queen's peace" to the remotest mining camp. All these issues are dead now, the only object in alluding to them is to explain to "superior persons" how Ontario came first to be settled, and what were the distinguishing traits of the men who settled it.

If there had been, in 1776, a vote by ballot of the whole people, the disruption of the English race would never have been consummated. The preacher appointed to preach before the Continental Congress as late as February, 1776, prayed for a restoration of "the former harmony between Great Britain and these Colonies upon so firm a basis as to perpetuate its blessings, uninterrupted by any future dissensions, to succeeding generations," and, when he published his sermon later in the year, he would not suppress his prayer, for he said, "It is consonant to every declaration of Congress which has appeared, and it would be indecent to suspect sentiments which they have not declared."

It will be impossible to understand the history of the Dominion without knowing what kind of people these Loyalists were. A clear majority of the educated men and of the professional classes in the colonies were in favour of the king, and in the ranks of the Loyalists were the most brilliant names of old colony history. A work of high authority, published of late years in Boston, shows that of 310 citizens banished and proscribed by Massachusetts alone in 1778, more than 60 were graduates of Harvard University. The United Empire

Loyalists who settled in Canada were, for the most part, men who possessed property or had occupied important positions in the colonies. They were not obscure persons who could slink back into their former places in society ; but were important enough to have all their property confiscated, and in many colonies to be threatened with death if they returned, nor was there any amnesty for the vanquished, as has usually been the case after the bitterest civil wars. The Loyalists were not the only losers ; for it has been well said that what France lost by the emigration of the Huguenots the United States lost by the emigration of the Loyalists. France has indeed been great and prosperous since ; but in the expulsion of the Huguenots she lost an element which would have saved her many a throe, and have retained her institutions on a more stable foundation.

At the close of the war the adherents of the Crown had taken shelter in the sea-board cities still held by the royal troops. In the month previous to the evacuation of New York, says Sabine, upwards of 12,000 men, women, and children embarked for Nova Scotia and the Bahamas. Many settled on the iron-bound Atlantic coast of Nova Scotia, and many on the inhospitable coast of eastern New Brunswick. At Port Roseway, and Shelburne, and at St. John, most of them were utterly destitute, and lived in log huts through the winter, and were preserved from starvation by the issue of rations at public expense. Those who went up the Bay of Fundy to Annapolis and Windsor fared better, for the land was good and, after the first winter, they could live off the land. So it was also with those who went up the St. John river, but those who settled first on the rocky Atlantic coast suffered every privation. The treaty of peace had only stipulated that Congress would *recommend* the different

states to revoke the confiscation laws, and when the *recommendation* was issued the obligation was performed.

Nova Scotia had some settlers, but New Brunswick and Ontario were forest wildernesses. The Loyalists flocked into Ontario on foot by way of Lake Champlain and Montreal. Others went to Oswego and built boats in which they coasted round the northern shores of the lake seeking for a home. There had been a French fort at Cataraqui, and there the first settlements were made and the name changed to Kingston. Then followed settlements around the Bay of Quinté and along the shores of the river, and of Lake Ontario. These were followed by settlements at Niagara, and on the shores of Lake Erie. It is difficult to ascertain the precise number who emigrated from the revolted colonies, but Kingsford with much reason rates it as about 45,000.

To those who see the fair and fertile province of Ontario as it exists to-day, with its rich homesteads and prosperous towns, the country will seem indeed to be a fair and goodly heritage; but in 1784 it was a forest wilderness. The aboriginal inhabitants had been dispersed or massacred in the ruthless Iroquois raids, and it was roamed over by wandering bands of Mississaugas, a tribe of Ojibway stock from the North-west. The forest was dense, and even the Indian trails were almost obliterated by disuse. Every acre had to be won by the axe, and the crops grew among the stumps. The scattered settlers had no roads, nor bridges, nor schools, nor churches, and it was well for them that they themselves were intelligent and instructed people; for they straightway set themselves to organise municipal and political institutions, and to found schools. There never was a "wild west" in Canada. The west was as orderly as the east.

The province was set off in 1791 with its own

governor and legislature. The first seat of government was at Newark, now called "Niagara on the lake," but when Fort Niagara was given up to the United States, Governor Simcoe saw that it was impossible that the capital of the province should be commanded by the guns of a United States fort; so, after consideration of several localities, he decided upon the present Toronto. He called the place York, a name which it bore for forty years. There in the wilderness the legislature of Upper Canada met in 1797, and the refugees proceeded to the business of political organisation with all the dignity of thoughtful and instructed minds. Governor Simcoe had been Colonel of the Queen's Rangers in the Revolutionary War and was at home among the Loyalists, and the work of organisation and of clearing the forest went on rapidly.

But Ontario—then Upper Canada—was not allowed to enjoy a long peace, and the Loyalists soon had to fight for their wilderness homes. The war of 1812-14 was forced on Great Britain, and both Upper and Lower Canada braced themselves for an unequal struggle. It was very unequal, for the population of the United States was then 8,000,000, and of Canada 300,000, of whom only 75,000 were in Upper Canada, and bore the main weight of the invasion. There were more soldiers in the American army than the whole male population of Ontario capable of bearing arms. The American army crossed the Detroit river on July 12, 1812, and General Hull, in a proclamation dated the same day, tendered "the invaluable blessings of civil, religious, and political liberty" to this very people who had cleared the forests of the northern wilderness to escape from civil, religious, and political oppression; who had been threatened with death if they returned to their own native colonies to claim the estates, confiscated because of their political opinions.

Great Britain was at that time in the very crisis of the struggle with Napoleon Bonaparte, and was fighting single-handed against the world. She could not spare many men, but she sent Major-General Brock, who was an army in himself. The Provincial Legislatures voted money and men, and raised regiments of militia. The first blow of the war was struck from Canada by a company of infantry and 200 Canadian voyageurs, who captured the fort at Michillimackinac and held it throughout the war. General Hull and the invading army were captured, and Detroit was taken within six weeks. A little later Major-General Brock was killed in action near Queenston heights on the Niagara frontier as he was leading a column of Canadian militia up a hill in the possession of the enemy. He is the hero of Ontario, and no nobler character can be found in the annals of modern warfare. His remains rest under the monument which crowns the heights and looks over the frontier he guarded so well. His death was mourned with passionate grief, but his spirit inspired the Canadian militia with fresh courage and determination, and the result of the first year was, that the soil of Canada was clear of invaders, and the British held Michigan.

The following year the American Government made greater efforts, and the British met with some reverses. The enemy obtained command of Lake Erie, and burned the town of Newark and the farmhouses around; raided the capital of the province, now Toronto, and burned the public buildings, but did not hold the place. The net result of the year's operations was, that the Americans retained only Amherstburg, in Canada, while the British held Fort Niagara, in the state of New York. The following year there was very severe fighting on the Niagara frontier, and attempts at invasion all along the border;

the bloody battle of Lundy's Lane was fought, but the net result at the close of the three years of the war was, that not an acre of Canadian territory was in the possession of the invaders, excepting the village of Amherstburg on the Detroit river. On the contrary, the British held Michillimackinac in Michigan, Fort Niagara in the state of New York, and nearly the whole of the state of Maine. Peace was signed on December 24, 1814. The brunt of the conflict had been borne by the militia of Upper Canada.

In a rapid sketch such as this, all details of battles and campaigns must be relegated to the books of history. There is no object in reviewing these past griefs, save to hope they may never recur, and to show how the Canadian character was formed and how mistaken those were who supposed the country to be an easy conquest. The war was not popular in the northern states of the American Union, and was decided on by a very small majority in Congress. President Madison and his advisers were under a singular hallucination as to the feelings and wishes of the people of Canada. Great Britain had the world in arms against her, and the Canadian militia had to bear a very heavy share of the defence, and bore it bravely and cheerfully. The best summary will perhaps be found in the dry narrative of the official confidential "Precis" previously referred to.

"It (Congress) conceived that the American flag had only to be shown to be followed, and that the British authority and influence was confined to the barracks and military posts in the Canadas. The Canadian militia, however, uniformly behaved well. The only partisans and well-wishers to the Americans were a few discontented emigrants from England who were dissatisfied without any reason, and who, probably, as no form of government could have pleased them, would have been

equally troublesome under that of the United States. There were fortunately but very few settlers of this description. The great majority of the Upper Canadians were happy, loyal, and contented." These words are as true now as in 1826 when they were written.

After the peace the Canadians once more settled down to quiet progress. They cleared farms, built roads and bridges, dug canals, grew crops, developed trade by steamers and sailing craft on the inland waters, and inaugurated their municipal and educational systems. Political questions began to occupy more attention, and the two immemorial forces inherent in British political life acted and reacted in this as in all other colonies of the Empire. The seat of government remained at Toronto until the union of Upper and Lower Canada. Sometimes the struggle waxed warm, and in 1837 occurred in Upper Canada, as well as in Lower Canada, a short-lived insurrection against the state of affairs then existing. This would have been of little importance but for the active sympathy of the United States. Then came the mission of the Earl of Durham, the union of Upper and Lower Canada under one government in 1841, and the introduction of what is known as "responsible government." This was really consummated by the Earl of Elgin, one of the most capable governors who ever served the British Crown in Canada. Under his care the sails of the ship of State were trimmed to the changing winds, and the system of complete parliamentary control was inaugurated. It is beyond the scope of this chapter to follow the details of the political events which led to confederation in 1867. These are given in the books of history. The object of this sketch will be fulfilled if it conveys an idea of the way in which the character of the Canadian people was built up. It originated in devotion, self-sacrifice, and

sorrow, among alarms and threatenings and wars, and it was formed and sustained through all adversities by courage, loyalty, and faith.

NOTE TO CHAPTER XII

The story of the United Empire Loyalists will be found narrated fully in the following works:—

CANNIFF, WILLIAM, M.D.

History of the Settlement of Upper Canada, with special reference to the Bay of Quinté. Toronto, 1869.

RYERSON, REV. EGERTON, D.D.

The Loyalists of America and Their Times. 2 vols. Toronto, 1880. Dr. Ryerson was the father of the present educational system of Ontario.

SABINE, LORENZO.

Biographical Sketches of Loyalists of the American Revolution, with an Historical Essay. 2 vols. 8vo. Boston, 1864.

The Hon. Lorenzo Sabine was a citizen of the State of Maine. His was the first United States book to do justice to the memory of the Loyalists.

LAWRENCE, J. W.

Footprints in the Early History of New Brunswick. St. John, N.B., 1883.

The Loyalists who settled in New Brunswick are the theme of this work.

The first number of the "American Historical Review," published in New York, October 1895, contains an important and impartial article on the Loyalists by Prof. Moses Coit Tyler.

Of the histories published in the United States before the civil war, Hildreth's is the only one which has attempted to be impartial. Among the English historians Lord Mahon and Mr. Lecky have based their studies upon original documents and authorities, and their works are of great value. Prof. Goldwin Smith, in his "History of the United States," has done justice to the Loyalists. Other British writers do not appear to have gone beyond the United States Histories, and appear unconscious of any other version.

The history of the war of 1812-14 is narrated with much detail in Kingsford's "History of Canada." Many special histories have been printed in the United States, as well as in Canada, but Dr. Kingsford has had the advantage of access to the recent collections of papers in the Canadian archives.

CHAPTER XIII

PROVINCE OF ONTARIO—DESCRIPTION

Boundaries

THE province of Ontario is bounded on the east and, partly, on the north by the province of Quebec, and on the south by the international boundary. Its western boundary is the international boundary, as it follows through the centre of the great lakes and along the water-courses to the north-west angle of the Lake of the Woods. The remaining portion of the boundary on this side was defined by a Commission, and settled by Act of the Imperial Parliament in 1889. It commences at the north-west angle of the Lake of the Woods, and continues north in a direct line to the river (English river) which discharges Lonely Lake; it follows that river eastward, up to and through Lonely Lake, across to Lake St. Joseph, through that lake and down the Albany river to James Bay. That line forms the remaining part of the northern boundary. The eastern boundary was extended at the same time by a line from the head of Lake Temiscaming, past the height of land to James Bay, and thus overpasses the limit of the province of Quebec, although both provinces formed part of the same New France. Legislation will no doubt soon rectify this discrepancy on the map

by extending the province of Quebec also to James Bay.

The area of the province of Ontario is about 222,000 square miles. Its shape is very irregular. The southern boundary is really south-west in direction, for the peninsula projects diagonally southward from 45° through three degrees to latitude 42° , almost precisely to the latitude of Chicago, and well south of the latitude of Boston. The length of this diagonal south-western line, from the boundary at Coteau du Lac, on the east, to Sarnia, is about 600 miles by water, and the Canadian Pacific railway line, running due west through the province in its extreme length from Ottawa to Ingulf, is 1202 miles. If a line be drawn from Sarnia, the most southern point of the province, to Fort Albany on James Bay on the extreme north, it passes through ten degrees of latitude, very nearly from 42° to 52° , or about 690 miles. These figures give a vague idea of the extent of the province. Approximately, and in a general way, it may be said to consist of the great peninsula situated south of a line drawn due west from Ottawa to Georgian Bay by the Mattawa and French rivers and Lake Nipissing, and a vast territory north of that line now being opened up by lumberers, miners, and settlers. These two grand divisions must be kept before the mind in any inquiries as to soil, climate, or productions, for they are very different.

Contour of the Land

Throughout its whole extent Ontario is an undulating plain, without any prominent elevated ranges to mark its surface, and sloping down gradually to the great waters at the north, south, and west. None of the water-

partings which control the courses of the rivers are high. The northern shores of Lakes Huron and Superior are high and bold, but the shores of Lakes Erie and Ontario are low. The land, indeed, rises at its highest points to an average of 1200 feet above the sea; but the rise is so gradual as to be imperceptible to the eye, excepting along the line of the western escarpment, where a height of 1600 feet is attained at the summit of the Blue Mountains in the western peninsula, where the escarpment sweeps along the southern shore of Georgian Bay and into the promontory of Bruce, dividing the bay from the main lake.

Hydrography

Putting aside for the present any description of the great lakes, it may be said that the whole of the province, excepting the peninsula west of Toronto, is studded with countless lakes, and the whole province, without exception, is watered by numberless streams which are fed by a regular and always sufficient precipitation.

Taking first the northern portion of the province it will be seen that the water-parting of Hudson's Bay enters on the east from Quebec about 40 miles north of Lake Temiscaming and passes north of Lake Huron and Lake Superior in a sinuous course at an average distance of 60 miles. At a point near Jackfish Bay the water-parting comes close down to the shore and then suddenly turns north to sweep round the heads of the feeders of Lake Nepigon, then, turning south, in a bend equally abrupt and equally sinuous, it crosses the international boundary at Pigeon river on the Grand Portage about 60 miles from the lake shore. It must, however, be observed that near the bend where the water-parting

finally turns south there is a divide running to the north between Lonely Lake and Lake St. Joseph. West of the watershed from that point, and west of that divide, the water does indeed eventually reach Hudson's Bay, but first flows into the sub-basin of Lake Winnipeg. Lake St. Joseph drains eastward by the Albany river, and Lonely Lake (Lac Seul) drains westward into English river, which falls into the Winnipeg river almost precisely at the extreme north-western point of the boundary of the province. The northern watershed slopes gradually down to James Bay and, as the shore is approached, the Laurentian rocks are covered by limestones of Silurian and Devonian age as described in the chapter on Hudson's Bay. The western or Winnipeg watershed has been already described in Chapter III. in treating of the general hydrography of the Dominion.

The water-parting of Hudson's Bay approaches so closely to the lakes that the rivers are all short. They are very numerous, but none are of sufficient importance to be noticed. There are also many lakes, but none are important save Lake Nepigon. This lake is 70 miles long by 40 miles broad and has an area of 1450 square miles. It is very deep, no bottom having been found in places at 540 feet. It is 665 feet above the sea, and drains into Lake Superior by the Nepigon river, about 30 miles in length.

Coming now to the second grand division of the province, namely the great peninsula enclosed between the Ottawa on the east and the great lakes on the west, it is divided into two parts by what is called the Niagara escarpment, marked conspicuously at the point where it crosses the international boundary, by the Falls of Niagara. The river has cut its way back through the limestones

and flows, after its fall, for several miles through a cañon 200 feet high. The escarpment commences in Canada at Queenston Heights and follows westwardly along the southern shore of Lake Ontario at no great distance in rear of St. Catharines and Hamilton. Having reached the head of the lake, it turns sharply to the north-west and passes through the heart of the western peninsula to Georgian Bay near Owen Sound at its western corner. Thus the greater peninsula of Ontario is divided into an eastern plain between the escarpment and the Ottawa river, having an approximate area of about 16,000 square miles, and a higher western plain with an area of about 10,000 square miles sloping gently down to Lakes Erie and Huron from the summit of the escarpment.

Considering first the eastern or lower plain, it may be divided into five drainage basins. First the Ottawa basin. The chief rivers falling into the Ottawa on its western or Ontario side have been mentioned in connection with the Ottawa valley in the chapter on the province of Quebec. Many of them are large rivers and reach far into the centre of the province. Those which fall in east of Ottawa city rise very close to the St. Lawrence. One of the branches of the South Nation river, which falls into the Ottawa half-way between Montreal and the city of Ottawa, rises in the townships of Matilda and Edwardsburg only a mile and a half from the bank of the St. Lawrence, and the water-parting there is only thirty feet above the latter river. The Ottawa basin forms therefore an important division of the lower plain, while the basin of the St. Lawrence proper is of little comparative importance.

The second division of the eastern plain is a narrow strip of country draining into the main St. Lawrence and extending along the river as far as the Thousand

Islands where the Laurentian rocks cross the river. This is physically an unimportant division, for the watershed is so narrow that it can form no river of any size, all the important streams drain away to the Ottawa at the north.

The third or central division is the basin of the Trent, called the Otonabee in its upper reaches. This river has a winding course of about 170 miles, and drains a country full of lakes of the most irregular shapes. Balsam, Scugog, Chemung, Sturgeon, Stony and Rice Lakes are large lakes, but the number of smaller ones is beyond count. The valley of the Trent is wide, and its course is most eccentric. It doubles, by six sharp turns, the direct distance between its source and its mouth, and the Bay of Quinté, into which it falls, zigzags in similar sharp angles before joining the main lake. The basin of the Trent spreads very widely, for Scugog Lake, its main feeder on the south, is only 17 miles from the shore of Lake Ontario. The height above the sea of the chief sources of the river are—

	Feet.
Balsam Lake	820
Cameron Lake	815
Scugog Lake	797
Sturgeon Lake	793
Pigeon, Buckhorn, and Chemung Lakes	788
Stony and Salmon Trout Lakes	758
Rice Lake	596

The amount of water power in this basin is evident by the drop from the upper lakes to Rice Lake, and from thence to Lake Ontario 240 feet above the sea. This subdivision is drained also by the Moira river and two small streams, the Salmon river and the Napanee, but all fall into the Bay of Quinté, and they may be conveniently grouped into one subdivision.

The fourth division of the eastern plain is the basin of Georgian Bay, and its southern arm Nottawasaga Bay. This basin touches the Ottawa basin on the east, and the Trent and Ontario basins on the south. Its chief feature is Lake Simcoe (area 283 square miles), the most western lake of any importance in the peninsula. There are several large rivers in this division. At the north is French river draining Lake Nipissing, the Magnetewan drains a number of small lakes, the Muskoka river drains the Muskoka lakes, and the Severn drains Lake Simcoe. On the south the Holland river rises at the Toronto portage, and on the west the Nottawasaga river flows along the base of the escarpment and empties into the bay of the same name. It flows in a broad valley about twelve miles from the foot of the cliffs, and some of its feeders rise even west of the escarpment and cut through it in deep ravines. Lake Simcoe is 704 feet above the sea, and lies in a depression which barely misses being a continuation of the Trent valley. It drains into Lake Huron, but the water-parting between it and the Trent is very narrow. A series of works are being constructed to connect Georgian Bay with the Bay of Quinté through the Trent valley, and thirteen locks have already been built to overcome obstructions.

The distance between the Bay of Quinté and Georgian Bay is 200 miles, of which less than 20 miles will require canals; the rest of the proposed route will be by stretches of water communication improved in various ways. The works now in progress will open up 160 miles of direct and the same extent of lateral navigation.

The fifth and last division of the lower plain may be called the Ontario division, as its streams fall directly into that lake. It extends from the Trent division on the east to the Niagara escarpment on the west, and is bounded

on the north by the basin of Georgian Bay. The only streams of note are the Humber and the Credit. The Humber falls into the lake at Toronto. The old portage route to the north was by the Humber and across to the Holland into Lake Simcoe and thence by the Severn into Georgian Bay. The water-parting of the Humber and Holland is 904 feet, and of the Nottawasaga and Humber is 950 feet above the sea, from which it will appear that this plain scarcely attains at its highest point a height of 1000 feet above the sea, or 760 feet above Lake Ontario.

The Niagara escarpment, as before explained, forms the edge of a higher plain, and its drainage has reference solely to Lakes Erie and Huron, which are respectively 566 and 576 feet above the sea. It is distinctly marked in its whole course across the country and presents a face more or less steep to the east. At places the weathering of the limestone cliffs and the wearing away of the softer rocks beneath have produced scenes of wild and picturesque beauty. This upper plain attains at one place an extreme height of about 1200 feet above the sea, and on its western side rise the streams which water the garden of western Canada. The escarpment continues to the north to form the long promontory of Bruce, and then passing along the southern shore of the Manitoulin Islands, crosses over into Michigan at the Straits of Mackinac.

The area of the upper plain is about 10,000 square miles, and it may be divided into four basins. First, the basin of the Grand river; this stream rises in the highest part of the western slope of the escarpment, and its descent is so steep in the first part of its course that it was called by the French *La Rivière Rapide*. On its banks are many manufacturing towns of importance, and

from Elora it drops 600 feet to Lake Erie. Below Brantford it is a tranquil stream flowing out by a large estuary into Lake Erie at Port Maitland, about 30 miles west of the discharge of the lake.

The river Thames, which is the chief physical feature of the second basin, rises also on the western flank of



AT ELORA, ON THE GRAND RIVER.

Connon, Photo.

the escarpment, but more to the south, and is a quiet stream meandering through a beautiful park-like country in a general course at right angles to the Grand river and falling into Lake St. Clair at the western end of Lake Erie. These two streams drain the centre of the upper plain.

The valley of the Thames is broad, and there is much rich intervale land wooded with willows and elms; sheep

and cattle graze on the sloping hill-sides, and clumps of oak and elm and maple are interspersed with meadows, and give the general impression of an English landscape.

On the south of these two basins is the third subdivision—a narrow strip running along the shore of the lake, drained by short streams and brooks falling directly into Lake Erie. The fourth is the Huron basin—a triangular tract north of the Thames basin and between the northern part of the escarpment and the lake—drained by the Maitland river falling into Lake Huron at Goderich, and by the Saugeen falling in at Kincardine. This upper plain of the province of Ontario is very important from its great fertility and from the density of its population, and while these divisions and subdivisions of the peninsula may seem very small, every physical fact regarding so important a part of the province is of interest.

Geology

In the chapter on the province of Quebec it has been shown that the Laurentian formation crosses the Ottawa river at the Lac des Chats where it is the cause of numerous cascades. From that point it sweeps down to the St. Lawrence river and crosses into the state of New York, forming the beautiful archipelago of the Thousand Islands. In this way it cuts off to the east a triangular area of about 10,000 square miles in extent, of Cambro-Silurian rocks between the two great rivers. This area, as has been seen, is very level and drains mostly to the Ottawa. It is still densely wooded, and is settled chiefly on the banks of the rivers. The only elevation to break the level surface is the Rigaud mountain on the Ottawa, a mass of trap rock rising 538 feet above the plain.

If a line be now drawn due west from the Thousand Islands to Matchedash Bay, in the Georgian Bay of Lake Huron, it will mark the southern limit of the Laurentian formation. North of that line the whole territory is Laurentian, or rather it is a region of Archæan rocks; for it includes very large areas of the Huronian formation, and, as the country is surveyed, new areas of Huronian are being continually found. This is very important to remember, for these latter rocks are usually metalliferous.

South and west of this line of Laurentian, and close up to the escarpment previously described, the whole of the lower plain is underlaid by Cambro-Silurian rocks, the same in general character as are found in the plain country of Quebec in the valley of the St. Lawrence.

The escarpment, so frequently mentioned as forming the leading physical feature of the western peninsula, is the edge of a series of rocks belonging to the Middle and Upper Silurian, Devonian, and Erian series. This series contains in ascending order the Niagara limestones seen at Niagara Falls; the Guelph formation, a special group of dolomitic rock with characteristic fossils; and the Salina or Onondaga group containing important deposits of salt and gypsum. These are succeeded by rocks classified as Erian (Devonian) containing the "corniferous" limestone, remarkable for the abundance of its fossils, and the Hamilton shales, important as the source of petroleum. These formations occur in the successive order above given, and in bands across the western peninsula from Lake Ontario to Lake Huron.

The Lakes

The distinguishing characteristic of Ontario is the important physical fact that the great peninsula is

practically surrounded by water—not only the western peninsula and the upper plain, but the whole peninsula from the Ottawa river as a base to its apex on the Detroit river. Georgian Bay reaches far down towards Lake Ontario, and in the belt of Laurentian country from Lake Nipissing to the Thousand Islands though the lakes are small they are beyond all count. The aggregate area of the great lakes alone is 98,500 square miles including Lake Michigan, which, though in the United States, is sufficiently near to have an effect on the climate of Ontario. The greater peninsula of Ontario is what is generally meant in conversation by “Ontario.” The outlying territories dependent on the province are the districts of Nipissing, Algoma, Thunder Bay, and Rainy river—parts no doubt of Ontario in its widest sense; but the population and strength of the province is in the peninsula, and lies south of a line drawn along the 46th degree of latitude. On a previous page is given a table of the dimensions of the greater lakes.

The shore of Lake Ontario is comparatively low, rising only from 50 to 150 feet above the surface of the lake. The most remarkable feature of the lake is the peninsula of Prince Edward separated by the Bay of Quinté from the mainland. The Murray canal, $5\frac{1}{6}$ miles long, without locks, cuts across the neck of the peninsula. There are many excellent harbours along the lake, Kingston, Cobourg, Port Hope, Whitby, Toronto, Hamilton, and Port Dalhousie at the mouth of the Welland canal are a few of them. The lake is deep and navigable over its whole extent. It is 190 miles long by 50 miles in average breadth, and its area is 7330 square miles. Many cities of importance are on its shores, for it lies between the most populous province of Canada and the important state of New York. Its clear waters

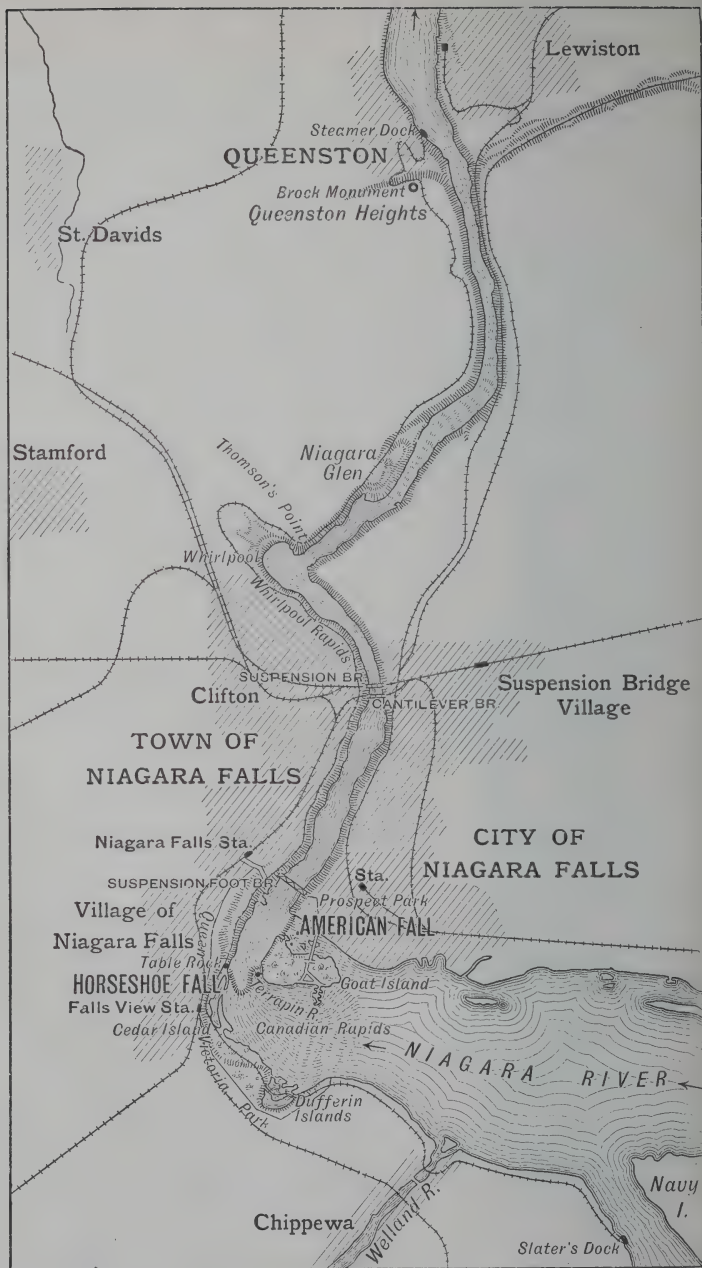


LAKE CRAFT AT KINGSTON.

are studded with the white sails of lake craft. Passenger steamers ply in abundance to the many cities which surround it, and long tows of barges bring down to the sea the agricultural treasures of the west. The rivers which fall into the lake are not important. The largest is the Trent. The main feeder of the lake is the Niagara river which, in its short course from Lake Erie, drops 326 feet not only over the Niagara Falls but in rapids above and below.

The Niagara Falls have been the theme of so many descriptions, not only in guide-books but by writers of great literary eminence, that it is difficult to write about them, and the more they are known and the longer one tarries within the sound of the falling waters the less one is inclined to attempt to describe them. The enormous volume impresses the mind only by degrees; for at first sight it is not realised, and the steady unintermitting flow of the cataracts slowly impresses the nerves by its solemn and monotonous roar. Nothing now detracts from the full enjoyment of the scene. All the pestilent swarms of touters, of curiosity-dealers, of fakirs and mountebanks are utterly swept away on both sides of the river, and beautiful grounds, cared for by public officers, skirt the banks of the falls and rapids, both in Ontario and in the state of New York. On the Canadian side the park is longer, for the river makes a deep curve; but an electric railway runs through its whole length and a visitor may stop anywhere his fancy dictates.

The Niagara river did not form part of the main route to the west in the earliest days of the colony. That was by the Ottawa and French rivers to the Strait of Mackinac; so that Lakes Huron, Michigan, and to a great extent, even Superior, were well known before Lake Erie. Nor was this strange, for not only were the



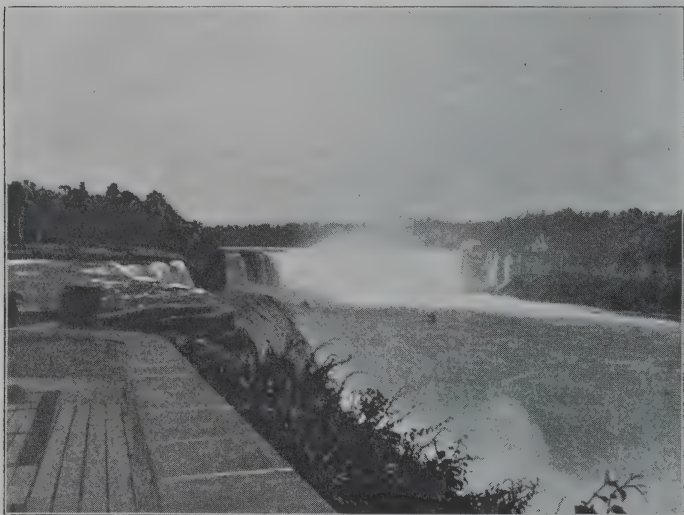
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London: Stanford's Geog. Estab^t

hostile Iroquois avoided by the Ottawa route but the circumnavigation of the peninsula was also avoided, and on Champlain's map of 1632 Lake Erie is shown only as a long river. About the position of Niagara a fall is indicated. In the *Relation* of 1641 Lake Erie is mentioned and the river is called Onguiaahra. No fall is alluded to; but, in 1648, Father Raguenot mentions a fall of a "frightful height"; and in Sanson's map of 1656 the lake is plainly shown and the river is called Ongiara. The simple word "sault" indicates the knowledge of an existing fall, but the information is evidently from Indian reports, and even on Galinée's map of 1669 the fall is laid down as "reported by the Indians to be 200 feet high." La Salle heard the roar of the water as he passed the Niagara river on his way to the head of the lake in 1669. There he met Jolliet on his way down from the upper lakes, but he too had avoided the Niagara river for fear of the Senecas, and had gone up the Grand river and made a portage across to some point near Hamilton. La Salle remained behind, but Dollier and Galinée, two Sulpician priests in his party, took the trail to Grand river and wintered on Lake Erie. It was in 1678 that La Salle, Tonty, La Motte, and Hennepin saw the falls, and the first description on record is in Hennepin's *Travels* in 1683, where is also given a very fair drawing of them. The Frenchmen built a fort at Niagara, to the great annoyance of the Iroquois, and then made a portage to Cayuga Creek above the falls where La Salle built the *Griffon*, the first vessel on the upper lakes.

The Falls of Niagara are formed by the precipitation of the whole drainage of the four upper lakes from the upper to the lower plain, over the escarpment so frequently referred to in the previous pages. The edge of the escarpment is at Queenston Heights seven miles lower

down, but, in the course of ages, the river has cut its way back, and the falls are continuously receding in the same way. It has been ascertained that during the last forty-eight years the annual rate of recession has been, on the American side, 7.65 inches, and, on the Canadian side,



GENERAL VIEW OF NIAGARA FALLS.

Notman, Photo.

2 feet 2 inches. The group of rocks forming the escarpment at its edge is called the Niagara formation and consists of shales and limestones. At the falls the upper 85 feet of the precipice is limestone, and the lower 80 feet is of shale, so that the cataract erodes the softer shale and undermines the limestone above. This is best seen on the Canadian side, at Table Rock, where the limestone projects over the abyss. Not many years ago this ledge was much wider, but an immense mass of it broke off and fell into the caldron below.

The Niagara river flows from Lake Erie with a swift current, but moderates as it divides and expands to enclose Grand Island. Below the island it unites in a broad stream $2\frac{1}{2}$ miles in width. About half-way between the lakes the rapids commence, and gather momentum as they speed down an incline of 55 feet in three-fourths of a mile. At the edge of the fall is Goat Island dividing it into two unequal parts. The crest line of the American Fall is 1080 feet, and is almost straight. The Canadian or Horseshoe Fall, which carries four-fifths of the water, makes a grand curve and falls as into a huge caldron. The crest of water, as it curves in a clear green sheet over the edge, is 3010 feet. It breaks into white foaming masses as it plunges into the misty abyss. It is calculated that 7000 tons of water fall every second. The height of the fall on the Canadian side is 158 feet, and on the American side 167 feet. Two bridges span the river just below the falls—a suspension bridge and a cantilever bridge, respectively 825 and 900 feet long.

Below the falls the river runs with great rapidity between steep cliffs. A few miles below are the lower rapids and the tortured river, compressed into a width of 300 feet between cliffs of rock 200 feet high, forms a whirlpool where the currents not only swirl round horizontally but from below in confused waves. At Lewiston and Queenston the river resumes its tranquillity, and steamers from Lake Ontario steam up to the wharves. The total fall from Lake Erie is 326 feet in a distance of 33 miles from lake to lake. The upper rapids account approximately for 55 feet, the cataract for 160 feet, and the remaining 111 feet is in the declivity of the lower rapids.

Lake Erie is another busy lake, the centre of the traffic of many cities. Its shores are for the most

part low (although there are in places long stretches of clay banks 50 to 100 feet high) and its waters are comparatively shallow. While the other great lakes are so deep that their bottoms are lower than the ocean surface, Lake Erie has an average depth of only 85 feet. The shallowest part is at the western end—west of Pelée Island. In the centre and east, the depth varies from 80 to 210 feet. The navigation is more dangerous on that account, and there are not so many good harbours. On the Canadian side the chief are Port Colborne at the entrance of the Welland Canal, Port Maitland at the mouth of the Grand river, Rondeau harbour, and Port Dover. In this lake, as also in Ontario, there is a bay at the eastern end cut off by Long Point, a low marshy spit 18 miles long, once a peninsula but now an island, the waves having cut a canal at the neck. It is the resting-place in their migrations of innumerable ducks and geese, and is the property of a club which holds it as a game preserve. Near the western end of the lake is Point Pelée, and south of it Pelée Island, well known for its vineyards. The lake is 250 miles long by 38 miles wide, and covers an area of 10,030 miles.

The Detroit river, about 32 miles long with a depth of 17 feet, leads into Lake St. Clair, a small and shallow lake 360 miles in area, and with an average depth of only 15 feet. The St. Clair river connects it with Lake Huron. The lake is about 25 miles wide, and the St. Clair river is 30 miles long. The steamboat channel in the lake is a canal across the flats $26\frac{1}{2}$ miles long by 300 feet wide and with 16 feet of water, kept to its proper depth by dredging. The shores are low. The river Thames is the only feeder of importance falling into the lake. The large city of Detroit in Michigan was an old centre of the fur trade; opposite to it is the Canadian

town of Windsor, and not far away on the Detroit river is Amherstburg, famed in the war of 1812-14 as the only point of Canadian territory held by the Americans at the close of the war.

The Detroit river is crowded with shipping and crossed by many ferries. The railway cars are ferried over on large barges, so the continuity of travel is not broken. It is calculated that in 1894, 34,800 vessels, with an aggregate tonnage of 26,120,000 tons passed through. The traffic is so large that it is now proposed to cut a canal from Rondeau harbour into Lake St. Clair through the counties of Kent and Essex. The distance would be only 15 miles against the circuitous route of 92 miles by the Detroit river.

Lake Huron, the *Mer Douce* of Champlain, being on the great route to the west by the Ottawa, was the first of the great lakes known to the French. It is 270 miles long, with an average breadth of 70 miles, and covers an area of 23,780 square miles. It is deep over its whole extent. In many places the depth is over 600 feet. The great island-studded expanse of Georgian Bay is almost a lake of itself. It receives the French river, the Severn, the Nottawasaga, and other rivers of importance, and is separated from the main lake by the great Bruce promontory terminating in Cabot's Head and by the long chain of the Manitoulin islands. The water of this great lake is singularly clear, and on summer days it is difficult to distinguish between the blue sky and the blue water, and a canoe will seem to float in the air. The southern part of the coast is low, but, near Goderich, the land rises into bold breezy bluffs and continues high to Cabot's Head, terminating in limestone cliffs 324 feet high above the lake. Goderich and Kincardine are the chief ports on the main lake, but the great

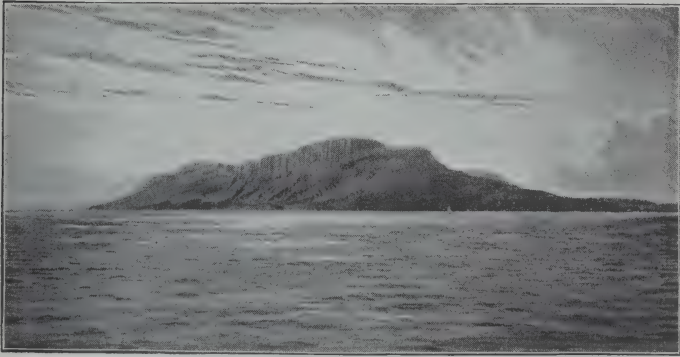
stream of Canadian traffic from the Sault Ste. Marie and the Straits of Mackinac passes into Georgian Bay to the crowded ports of Collingwood and Owen Sound—the terminal point of railways which carry the freight directly east and south to Toronto or Montreal, and avoid the long detour by Lake Erie. There are many harbours on the Georgian Bay. Before the convention for national disarmament on the lakes, Penetanguishene was the naval station for the upper lakes. The north shore is very high and bold, and rises up into cliffs of the formation called Huronian, from its great development in that locality.

Lake Superior—600 feet above the sea—is the last of the great series of St. Lawrence lakes, and is also the largest. It is 420 miles long, with an average width of 80 miles, and extends over 31,420 square miles. It is the largest sheet of fresh water on the globe—a serious and stern inland sea encircled by steep rocky cliffs 300 to 1500 feet high of Archæan age, interrupted by immense masses of granite and basalt. The water is very clear and very deep, averaging 900 feet, and the lake is subject to storms of great violence. Port Arthur and Fort William are the chief Canadian ports on the lake. Near them the gigantic ridge of Thunder Cape rises clear from the water, a mass of basalt 1300 feet high with an outline like a lion *couchant*.

Storm-beaten cliff, thou mighty cape of thunder ;
Rock Titan of the north, whose feet the waves beat under ;
Cloud-reared, mist-veiled, to all the world a wonder,
Shut out in thy wild solitude asunder,
O Thunder Cape, thou mighty cape of storms.

Thunder Bay is 25 miles long by 16 wide, and is surrounded by cliffs about 1000 feet high. Not far off is Pie Island, rising 950 feet from the lake

capped by a mass of eruptive rock, and near it is the little Silver islet, celebrated for having contributed from three to four millions of dollars worth of silver to the currency before the great fall in price. The St. Louis river falls in at the head of the lake—not a very important stream, but interesting as the source of the St. Lawrence. The Kaministiquia is a large river, the old portage route to the west, and Fort William was the



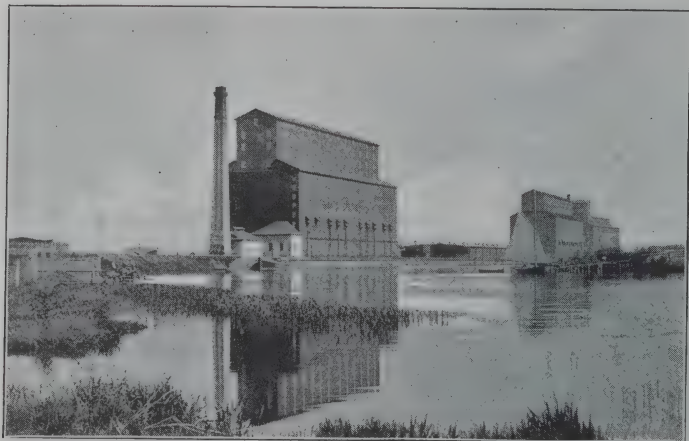
THUNDER CAPE, NEAR PORT ARTHUR, LAKE SUPERIOR.

entrance where the fur traders held high carnival at their reunions in the good old days of the fur trade, when the western plains were black with buffalo.

Fort William is in a beautiful valley at the foot of McKay Mountain, and has a good sheltered harbour. The business of the Canadian Pacific passes through Fort William, and there the Company has immense elevators for grain. It is gaining at the expense of Port Arthur. Lake Nepigon is the most important feeder of the main lake. It is a great lake 1450 miles in area, very deep, and a favourite resort of fishermen in summer. Off the mouth of Michipicoton river, formerly

one of the main canoe routes by Moose river to Hudson's Bay, is Michipicoton Island, another mass of eruptive rock.

Lake Superior discharges its waters into Lake Huron by the St. Mary's river, which, at one point in its course, falls in rapids 22 feet in a distance of three-fourths of a



GRAIN ELEVATOR, AT FORT WILLIAM, LAKE SUPERIOR.

mile. This is the Sault Ste. Marie, or locally the "Soo," one of the great cardinal points of the continent. There is a canal on the United States side, and the Canadian Government has just completed one on the Canadian side. It was only when the Canadian North-west began to open up that Canada felt the need of a canal of her own. The United States canal was overcrowded; and it may give an idea of the extent of the commerce of these upper lakes to add that, in the year 1896, 18,615 vessels, with a registered capacity of 17,249,418 tons, passed through the canals at the Sault. Among the items of

freight were 63,256,463 bushels of wheat, 27,448,071 bushels of other grain, and 7,909,230 tons of iron ore. There were 9466 lockages. The business of the Canadian canal out of the above aggregate 5136 vessels, of tonnage 4,395,156 tons, passing in 3042 lockages. The Canadian canal was completed in September, 1895. It is in one lock 900 feet long by 60 feet wide and with 20 feet 3 inches of water on the sills at lowest known level. It is larger than the present American canal, and will take larger vessels than can now navigate the lakes. The total length of the canal is 5967 feet, and its width 150 feet. During last summer three steamships with an aggregate length of 936 feet, and a registered tonnage of 4987 tons, were passed through at one locking. The cost of the canal was between three and four millions of dollars. Navigation on the great lakes opens about the middle of April and continues until the middle of December.

These great inland waters present very different aspects. Clear and bright, in fine weather, the blue sky is reflected from their transparent depths; but in days of storm, when the sky is black with clouds, they are very serious waters to navigate. The waves have not the long swell of the ocean, and are less regular in their movement. During a storm of several days the waves will attain an amplitude of 15 to 18 feet. The surface of the lakes is much affected by winds of long duration, and a long continued gale will raise the level of the leeward end of a lake as much as 7 feet. In that way storm beaches are formed on the shore. The level of the lakes is subject to fluctuations not yet accounted for, and recurring in cycles of years. The levels of the lower lakes have been recently below the average, but the level of Lake Superior has been above the normal height.

The great lakes do not freeze in winter, save in the shallow places along the shores, for the cold is not of sufficiently long continuance to cool the whole body of water to the freezing-point. As fast as the surface layer is cooled it sinks, and is replaced by warmer water of less density from below. The currents through the lakes vary from 4 to 12 miles a day; but during a long prevailing wind the rate may be increased to 2 or even 4 miles an hour.

The system of canals by which these great inland oceans are opened up to navigation has been already described, and it has been shown how the difference of level between Montreal and Lake Ontario is overcome by a series of nine canals, with an aggregate length of 42 miles, and overcoming a total drop of 205 feet. Between Lakes Ontario and Erie the difference of level has been shown to be 326 feet, and of this 167 feet is at Niagara Falls. The Welland canal overcomes this drop by twenty-seven locks in a course of 28 miles. It extends from Port Dalhousie on Lake Ontario to Port Colborne on Lake Erie, and the aggregate rise is 333 feet. This canal once passed, the whole of Lakes Erie, Huron, and Michigan are accessible, without further obstruction.

The parallel of 46° passes through two very important points—the head of tide water on the St. Lawrence and the key of the whole centre of the continent—that remarkable conjunction of the outlets of the upper lakes at the Straits of Mackinac and St. Mary. Montreal, a few miles above tide water, in the old fur-trading days was the eastern end of a navigation which led straight, by way of the Ottawa and Lake Nipissing to that central point of the continent. The route was due west, never deviating more than a few miles from the parallel of 46° —Lake Huron is 576 feet above the tide—the foot of

the Chaudière Falls at Ottawa is 118 feet above the tide. It is now proposed to open up this old canoe route by a series of canals, and connect by a line of waterways, almost as straight as the crow flies, the core of the continent with the ocean, and thus avoid the circumnavigation of the Ontario peninsula and the breaking of bulk on the railways.

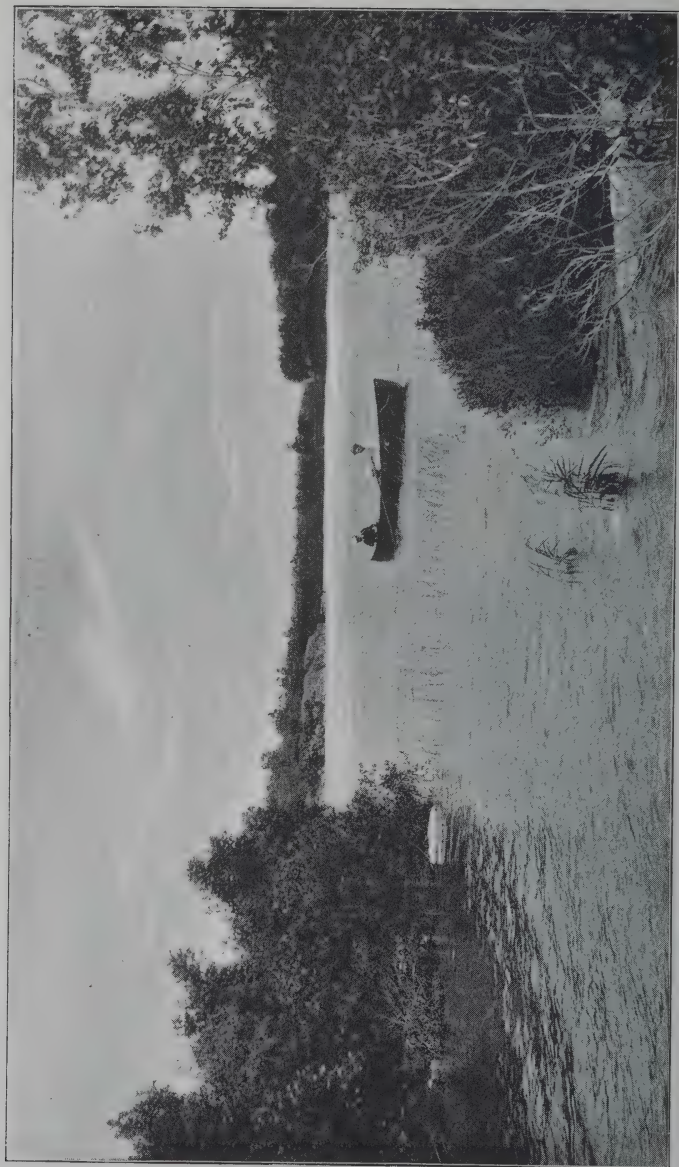
Natural Beauty

It must not be supposed that because Ontario is a level country that it is wanting in natural beauty. On the contrary, it has beauties all its own. Gazing across these blue inland seas in summer, and hearing the lap of the ripple at his feet, one might imagine himself transported to the Mediterranean. The Lake of the Thousand Isles has been long celebrated. It is 40 miles long by 4 to 7 miles wide, and contains about 1700 islands and islets. Georgian Bay, on Lake Huron, studded with islets and shut in from the main swell of the lake by the Manitoulin islands, is a paradise of loveliness.

That bay of wizard beauty, where
The frequent islets seem to float, so like—
In calms—the upper and the nether blue.

It is reported, on the authority of David Thompson, that Lieut. Collins, of the survey party, counted 47,500 islands and islets in the bay. Many of them are of very small size. Another estimate places the number at 30,000.

All the Laurentian country, from the Ottawa to the Trent and Lake Simcoe, is a wilderness of lake and forest. Much of this region is included in the Muskoka and Parry Sound districts, and is still in its pristine wildness, where the lumbermen's camps are the only settlements.



AMONG THE THOUSAND ISLANDS.

The Muskoka region is within a few hours of Toronto, and is a favourite summer camping ground, though there are good hotels through it. The region contains from 800 to 1000 lakes studded with islands and connected by a network of streams. With canoe and paddle one may go all over it, and thousands of people resort to it not only from the cities of Canada but from the United States. On the southern border was the home of the Huron nation when the Iroquois warriors extinguished it in blood. Two great routes led to Lake Ontario; one by the Severn, Lake Simcoe, and the Trent into the Bay of Quinté and the other by the Holland and Humber to Toronto. Lake Simcoe (on the old maps Lake Toronto) is one of the most beautiful places in the Dominion, and is the entrance to the Muskoka region. Champlain came down with the great Huron war party by that route, and although the waters of the lake are now ploughed with steamers, and canals are being built along the Trent, the great features of the country remain unchanged.

He passed
Up Severn's stream and o'er Toronto's lake,
Whose mirrored shadows, opalescent, glowed
With tremulous colour as the paddles dipped
And turned, disturbing all the magic scenes
Of sylvan beauty in its depths profound.
Still southwards down the rushing Trent he urged
His frail canoe; at times through level lakes,
Shooting at times down rapids. Quick the eye
And firm the wrist to hold the steady course
On the smooth current's crest. But where the stream,
With glassy torrent, glides unruffled down
And backwards swirls in foam against the rocks,
Then, landing on the narrow rugged trail,
O'er boulders wet and slippery with spray,
And stooping 'neath the brushwood overhead,
He, with his savage guides, their burdens bore
Down the portage's weary steep, until

The quiet water called them to embark.
At length he reached a place 'twixt verdurous banks—
The loveliest which Ontario's waters hold,
Where Quinté's matchless bay unruffled smiles.

Champlain belongs to the whole of Canada ; for he was as familiar with Ontario as with Quebec, and he visited almost every harbour on the Atlantic coast of Acadia. Few Canadians in these days of railways have seen more of Canada than he saw from his canoe. During the winter he spent with the Hurons he visited the Tobacco Nation and another nation farther west. He must have entered upon the upper western plain of Ontario and looked down on the beautiful country to the west and south sloping down to Lakes Erie and Huron, and covered, as Charlevoix says, by "the noblest forest of the whole world." Charlevoix saw it from the other side and pronounced it "the finest country in the universe." In Champlain's time it was, for an Indian country, populous, and trails led in all directions through forests of oak and elm and hickory and walnut. The Indian towns were surrounded with fields of maize, and pumpkins and sun-flowers and tobacco. Champlain saw the country in all its primitive beauty.

Muskoka's rocky glens,
Threaded by crystal streamlets and adorned
With lakes of gleaming silver. West and south
Still onward—to a lovely garden land,
Fair even in winter. On its farther verge
A bold escarpment overlooks the plain,—
And, on long summer days the gladdened eye
Dwells on a scene of beauty stretched below
Still richer. Like a billowy sea of smiling green
The woodlands wave below, and, far off, sweep
To distant shores of mighty land-locked seas—
The bourne to which the spirits of the dead
Addressed of yore their journey lone ; nor reached
But after weary travel.

He did not visit the Neutral Nation, and therefore did not see Niagara nor Lake Erie, but he heard of them from the natives, and he apprehended the character of the western province. He says "*Ceste terre est comme une isle, que la grande riviere Saint Laurent enceint, passant par plusieurs lacs de grande estendue.*" "*Le pays est fort plaisant, estant chargé de grandes et hautes forests, remplies de bois de pareilles espèces que ceux que nous avons en France.*" Much of the forest is now cleared, but there is enough woodland left to give the whole country the appearance of a park. On the upper course of the Grand river and along the edge of the Niagara escarpment the scenery is very beautiful, and on the cliffs looking over Lake Huron one might fancy himself on the chalk downs overlooking the English Channel.

Population

Ontario is the most populous province of the Dominion. Out of a total population of 4,833,239 given in the census of 1891 Ontario has 2,114,321, or about 43 per cent. Of these 66·8 per cent, or almost exactly two-thirds, live in the country. The proportion of the rural population is still large, but it has decreased since the previous decennial census, when it stood at 77·2 per cent. All of the people but 3·7 per cent are native-born British subjects, and four-fifths of the whole were born in Canada. The number of Protestants is 1,756,021, and of Roman Catholics 358,300. Of the different religious denominations the Methodists are by far the most numerous, being 654,033; the Presbyterians come next with 453,147, and the Anglicans next with 385,999. The population of the province is almost all in the older part, in the peninsula bounded by the lakes and the

Ottawa river. As originally planned, Ontario is still an English province, for 95·2 per cent of the people speak English as their mother tongue. What is called "the new Ontario" is now commencing to be colonised, but, up to the present time, has been known almost solely as a lumbering and mining territory. The province has many more cities and towns than the other provinces, for out of a total of 42 cities and towns having a population of 5000 and upwards, 22 are in Ontario. These smaller centres of population are also centres for factories, and the manufacturing industries are not gathered into one or two centres, but are diffused over the province.

Government

The capital of Ontario is Toronto, on Lake Ontario, the second city of the Dominion. Its population is given in 1891 as 181,220 within the old boundaries, but the city has been extended. A municipal census taken this year shows the present population to be 195,967. The provincial government consists of a lieutenant-governor, nominated by the Dominion Government, and a legislative assembly of 94 members elected on a manhood suffrage. The province started at confederation with one chamber only. The executive government is, as in all other provinces, a committee of the privy council having seats in the legislature, and holding office as long as they command a majority therein.

Ontario led the way in the important matter of local self-government, and first organised a municipal system which, while it relieved the legislature of the minor details of government, formed in every municipality a local school for training the people in the exercise of their political duties. It was from Ontario that the

municipal system spread to Quebec at the Union in 1841, and quite recently to most of the other provinces.

Education

The educational system of Ontario is eclectic, and based on principles adopted after a careful examination of the systems of other countries. It was welded into an organic whole and moulded to the requirements of the province mainly by the Rev. Dr. Ryerson, a man of unusual ability, born in Ontario, the son of an exiled Loyalist of the colony of New Jersey. It was commenced on the present lines in 1844 on Dr. Ryerson's appointment as chief superintendent of education, and he administered it until 1876, when the office was abolished, and its duties were assumed by a member of the government of the day. The Minister of Education, with his subordinate staff, now administer the education laws as a department of government. In this way unity of action is attained, and he administers it, moreover, through trustees elected by the local ratepayers, by which flexibility and perfect adaptation to local needs is secured. It is a complete system, and extends from the child of four years in a kindergarten to the B.A. of the provincial university fully equipped for his career in life. The principles of the system, as it has finally been shaped by the legislature, are deserving of careful study. Education is divided into three divisions, each distinct and complete in itself; and yet the course of study is uniform and consecutive without overlapping.

There are, first, elementary or, as they are called, public schools. These are free, and children from eight to fourteen must attend them or some private school of equal grade. They include kindergartens, in the towns

and cities, for children of four years; but children of six years may enter the elementary schools. Second, Intermediate education is carried on by high schools into which youths of thirteen years may enter. The fees are very low, and many are free of all charge. These schools, when equipped up to the fullest requirements of the law, are called Collegiate Institutes. Youths who have passed through these schools are prepared for the third division—higher education—and may matriculate at the university, where, after a four years' course, the degree of B.A. may be attained.

Taking first the autocratic side of the system, the Government, by statutes, orders in council, and departmental regulations, examines and certifies teachers, prescribes text-books and courses of study, compels attendance, dictates the essential requisites of school buildings, contributes grants, creates the machinery of local taxation, and appoints inspectors to secure conformity with the laws. The democratic side is manifest in the provisions for carrying out all details by boards of trustees elected by the local ratepayers of each school section. The excellent municipal organisation of the province makes this easy. The counties are organised by townships or by incorporated villages or cities; all are municipalities, and these are subdivided for educational purposes into school sections. Every school section has at least one public school, and every county has at least one high school.

Teachers are selected and appointed by the local boards, from among those certificated by Government, in three classes, according to their acquirements and abilities. In every county there is at least one school called a model school, under a highly-trained master, where, in addition to ordinary work as a public school,

students are prepared for a third-class certificate as teachers. There is a normal school at Toronto and at Ottawa where teachers are trained for second-class certificates, and a school of pedagogy at Toronto where first-class certificates are granted.

The main portion of the money required is raised by local taxation. Under the statute law this is imposed and collected by the locally-elected boards; and these trustees also administer all the finances, build the schoolhouses, and appoint and pay the teachers. In the wealthier cities the schoolhouses are large and handsome. The Government makes a grant to each board based on attendance, and the county council must raise an equal amount. In addition, the township council must contribute at least \$100 annually to each school; and if more is needed, the trustees must raise it from the ratepayers of the school section. It is a principle of the system to keep these three divisions of education separate. There are separate inspectors of public, model, and high schools, and they are managed by different boards of trustees.

It has been shown that in the province of Quebec the schools are frankly denominational. In a Roman Catholic province that is to be expected; but in a province like Ontario, where the majority is overwhelmingly Protestant and opposed to the least semblance of connection between church and state, the problem of doing justice to the Roman Catholic minority had to be approached in another way, and the result is creditable to the Christian toleration of the majority. The public schools of Ontario are not open to the reproach of being Godless. On the contrary, it is expressly laid down that "Christianity is the basis of the whole system of elementary education, and its

principles pervade that system," but at the same time "No religious body has any voice in the management of the high or public schools and the university."

Under the Act of Confederation the Roman Catholics of Ontario have certain privileges in relation to schools, and whenever five or more heads of families notify the clerk of the municipality of their intention to become separate school supporters they are excused from taxation for public schools. They elect trustees, who appoint teachers, and their taxes go to the separate school. It is provided that clergymen of any denomination may have the use of the schoolhouse after regular hours for religious instruction as may be arranged by the trustees, so that the whole question of religious teaching is settled, not by the Government, but by the people themselves. The Government inspectors visit these schools and keep them up to the legal standard, and the teachers must be certificated, but the Government does not concern itself with the religious teaching. The Roman Catholics generally avail themselves of these provisions, and in some localities, where Protestants are in a minority, it is they who have the separate schools. It is, however, the general law that every public and high school shall be opened with the Lord's Prayer, and closed with reading the Bible and with the Lord's Prayer, or a special prayer authorised by the government, and that the Bible shall be read systematically either in the complete King James's version or out of the authorised volume of selections from it, as the trustees may direct; but no comment may be made. Pupils whose parents have conscientious objections to such religious exercises may retire. All such matters are at the discretion of the trustees. There are in the province 289 separate schools, with 36,168 scholars.

The crown to this system is the University of Toronto, endowed, maintained, and controlled by the province. It is undenominational, and has faculties of arts, of law, and of medicine. It has also a college called University College, and a number of denominational colleges and similar institutions are federated with the University.



UNIVERSITY OF TORONTO.

These grant their own degrees in Divinity, and are represented in the governing body of the University which confers all other degrees. The chief among the federated bodies are Victoria University (Methodist), Knox College (Presbyterian), St. Michael's College (Roman Catholic), Wycliffe College (Anglican), Huron College (Anglican), the School of Practical Science, the Ontario Agricultural College, Trinity Medical School, the Women's Medical College, the Toronto College of Music, the College of Pharmacy, and the College of

Dental Surgeons. The people of Ontario are justly proud of their educational system, and they have succeeded in solving many most difficult problems in the debatable region of mixed questions of church and state. Those who prefer denominational institutions may resort to Queen's University, Kingston (Presbyterian); Trinity University, Toronto (Anglican); Ottawa University, Ottawa (Roman Catholic); M'Master University, Toronto (Baptist); and others.

Agriculture

Ontario is, above all, the province where agriculture has been most scientifically carried on, and where the greatest results have been achieved. As has been seen, it is a level country, and well watered. There is no possibility of summer drought, and lakes and running streams abound for cattle. There are, of necessity, patches of swamp land in such a country, but no arid land. The soil varies from sandy loam to clay loam in every possible gradation, according to the geological structure of the locality. In the older settled parts of the province the persistent cropping of wheat has, so far as wheat is concerned, lowered the productive power of the soil; but it is unimpaired for all other crops, and, after a due season of rotation, its power of growing wheat must return. The province grows the finest barley on the continent, and raises the finest cattle. All the productions of temperate regions grow throughout its extent, to the watershed of Hudson's Bay at the north. The Indian tribes, who inhabited the province before the whites, grew maize, tobacco, pumpkins, and beans, and were sedentary tribes with settled abodes. The western peninsula is more especially the garden of the province—the southern

counties are the centres of production of the choicest fruits. There the grape grows in the greatest perfection for the manufacture of wine and for table use. Peaches are cultivated in extensive plantations, and sold in immense quantities; and, for home use, the farmers grow apricots, nectarines, and quinces, over an area of several thousand square miles.

All over the province maize is a standard crop, and melons are grown in abundance. Every farmer may have his orchard, and grow fruit for his own use, if not for sale. It is necessary to dwell for a moment on these important facts, because Canada has been long misrepresented as a region of frost and snow, where it is difficult to wrest a living from an inclement climate. For this reason a few extracts from the last official returns are given below; and these figures will refer specially to such crops as maize, grapes, and peaches, because in that way the real conditions of the climate will most clearly appear.

The chief peach district in Ontario is in the southern counties around Niagara, along the shore of Lake Erie, and on the shore of Lake Ontario from Niagara to Toronto. But they may be grown anywhere as far north as the south shore of Georgian Bay. The largest orchards are at Niagara, Grimsby, and St. Catharines; but at the single station of Leamington, in South Essex, 35,000 baskets of peaches were shipped in the season of 1894. In that same year the peach crop of Niagara was estimated as 300,000 baskets, and the crop was so large that they were sold in the Toronto market at twenty-five cents, or one shilling sterling a basket. In the same year, at Winona in South Wentworth, 1200 tons of small fruits were shipped, and one firm alone paid \$3000 for baskets.

Grapes have long been a staple crop in Ontario, and the extent of their culture may be estimated from the following figures. They are grown all over the peninsula of Ontario, as far north as the south shore of Georgian Bay. On a preceding page is a view of a vineyard near Ottawa, but the most productive region is along the shores of Lakes Erie and Ontario, for there the farmers have given greater attention to the cultivation of the vine. In the census of 1891 the quantity of grapes produced is given at 11,725,281 pounds. There are 350 acres of vineyard on Pelée Island, and the Wine Company there pressed 500 tons of grapes in 1891. It is not easy to get a continuous series of figures for fruits which are consumed in a market near at hand and are not exported through the Custom houses. The returns made to the department of agriculture at Toronto in 1893 gave 2,000,000 of grape vines and 500,000 peach trees in bearing. These are approximate figures, but they are sufficiently precise to indicate a climate by no means rigorous.

Tobacco is not grown in Ontario to nearly the same extent as in Quebec, although the home of the Tobacco Nation (Nation du Petun) was between Toronto and Nottawasaga Bay. Only 314,086 pounds are returned in the census of 1891 as having been raised during the preceding year. For maize the figures are available for the year 1895. In that year there were 452,828 acres under this crop, and the product is given as 24,819,897 bushels for husking and 1,775,654 tons for fodder. This is a good indication of climate, but in fact, as pointed out before, maize will ripen anywhere in Central Canada away from the Atlantic sea-board.

The number of acres in orchard and garden in 1895 was 202,614. The farmers in the southern counties

have orchards, and many farms have 60 or 70 acres in peaches as an adjunct to other crops. The quantity of apples grown is enormous, as well as of small fruits. From one railway station alone, in 1894, 158,000 quarts of strawberries were shipped. Plums are also a very large crop.

A few items of the larger crops may now be given to show the extent of the agricultural interests of the province. The figures are for 1895—

Total acres under crop	8,321,073
„ „ pasture	2,728,655
Bushels of fall wheat raised	14,155,282
„ spring wheat raised	3,472,513
„ barley raised „	12,090,507
„ oats „	84,697,566
Pounds of cheese made	109,230,340
„ butter „	2,192,526

The extent of stock-raising is expressed in the following figures for the same year:—

Value of horses in the province	\$40,283,754
„ cattle „ „	46,708,017
Wool clip, 6,214,811 lbs.	

The total amount of assessed land in the province is given officially at 23,113,315 acres, made up as follows:—

Cleared land	12,426,992
Swamp „	2,828,904
Wood „	7,857,419

These details are available through the labours of the officers of the Department of Agriculture, and of an admirably practical institution, the Agricultural College at Guelph—an institution with a staff of eighteen professors, where everything concerning the farming interests of the province may be learned.

Climate

The old settled part of Ontario lies between 42° and 46° latitude, and, as before observed, is nearly surrounded by water. The effects of a cold wave from the west are modified by the lakes, while they are more severely felt farther to the south, where they pass entirely over land. The following table gives the result of observations extending over fourteen years, 1872-85. It gives the absolute highest and lowest points, the mean highest and lowest, and the monthly mean for January and July over that period. The object of this table is to show the climate of the western peninsula and of Toronto. London is in the centre of the peninsula, and Stony Creek is close to Hamilton, at the head of Lake Ontario.

TEMPERATURE IN DEGREES FAHRENHEIT. RESULTS OF FOURTEEN
YEARS' OBSERVATIONS

		London.	Stony Creek.	Toronto.
January.	Highest . . .	46·6	51·7	44·5
	Lowest . . .	-9·9	-4·1	-7·9
	Mean highest . .	27·7	32·8	27·9
	Mean lowest . .	12·7	19·0	12·9
	Monthly mean . .	21·33	21·84	21·01
July.	Highest . . .	90·4	94·8	89·0
	Lowest . . .	43·9	49·4	47·4
	Mean highest . .	79·0	82·4	77·3
	Mean lowest . .	56·1	59·8	57·3
	Monthly mean . .	68·42	70·5	67·34

The New Ontario

Hitherto the subject of this chapter has been the old Ontario—the solid populous peninsula; but, of recent years, since the boundaries of the province were enlarged, there is a new Ontario which must now be noticed. It is divided into districts—Muskoka, Parry Sound, and

Nipissing are such districts. The two first and a portion of the last, however, are in the peninsula as they lie south of the French river and west of the Ottawa. They form, together with the Ottawa valley, a lumbering region having all the characteristics of the Laurentian country so frequently described. These districts are near the large towns and cities. Railways run through them and they are the summer recreation grounds of the inhabitants of the large cities. In South Nipissing is the Algonquin park—a tract of eighteen townships, from whence pot-hunters are rigidly excluded—where the wild animals may roam unmolested, and where visitors may catch fish only with a hook and not more than are necessary for their own food. The park consists of 1300 square miles of land and 160 square miles of water. It is a forest reservation, well wooded with pine, maple, black birch, hemlock, beech, black ash, and basswood.

The districts which comprise the New Ontario are North Nipissing, extending from Lake Nipissing to James Bay, Algoma, from the north shore of Lake Huron to the Albany river, Thunder Bay, extending from the north of Lake Superior to the same river, and west of it the Rainy river district, from the international boundary to the northern and western boundary of the province.

While the question of boundary was unsettled very little attention was paid to these territories and very little was known about them. It is not strange in a country like Canada, where land is so abundant, that few cared to press along the northern shores of the upper lakes. It was seen that the shores were bold and rocky, and it was assumed that the back country was the same. When, however, two lines of railway were run through the district, it was seen that there was a large quantity of good land behind the coast barrier. The people of

Ontario recognised the fact that they had a territory of many millions of acres ; larger than all the New England States with New York added, and easily accessible by railway and steamboat, and that much of it was available for settlement. The country is a table-land elevated about 1000 feet above the sea, and exhibits an endless variety of lake, river, and forest country with soil of all kinds. It contains a good deal of broken rocky land in the ridges, but the valleys contain large areas of good land. It is a country of summer rains, and the numberless streams and lakes drain it thoroughly. It is a land of abundant grass, and cattle, and especially sheep, thrive there.

The quantity of pulp wood available in this region is past all calculation, but the forests are by no means all spruce or poplar. Elm, basswood, maple, beech, and oak are plentiful. The largest pulp mill in the world is now established at Sault Ste. Marie. It is situated near the Canadian canal and draws from the Sault 9000 horse power. The company possesses 50 square miles of pulp forest, and the mill can turn out 110 tons of pulp in a day. The recent tariff of the United States has been enacted with a view of excluding pulp made in Canada, and drawing on the Canadian forests for the raw material of pulp wood. Half of the wood used by the mills of New York State is drawn from Quebec and Ontario, and Maine is drawing largely on the forests of New Brunswick.

These remarks apply chiefly to Nipissing and Algoma. The Thunder Bay district is solely a mineral region. The chief town is Port Arthur at the head of Lake Superior. At Fort William, five miles from Port Arthur, is the shipping port of the Canadian Pacific Railway and the terminus of its line of steamers on the upper lakes.

The most western district is that of Rainy (Réné) river. The most of it is broken country studded with

thousands of lakes and covered with a network of myriads of streams hurrying away to the four points of the compass down the watersheds which converge there. Along the Rainy river, however, the soil is very rich for a distance of 80 miles, and the area of good farming land is calculated at 600,000 acres. There is farming land to be found in the valleys throughout the district, but it is scattered over the country. The chief town of this district is Rat Portage at the outlet of Lake of the Woods by the turbulent river Winnipeg. This is a town of a few years' growth, with a population of 4500, rapidly increasing on account of the mines opening up around it. It is the centre of enormous water power. The Lake of the Woods is the great reservoir for a countless number of lakes and streams, and is like an immense mill-pond with a surface of 3000 square miles. There are large lumber mills there (for it is an extensive lumbering district), and the largest flouring mill in Canada with an output of 2000 barrels of flour in a day. The wheat is from Manitoba and the North-west.

Fisheries

The fisheries of the great inland seas of the province have an important place in its industries. They are chiefly carried on in Lake Huron, although all the lakes abound in fish. The returns of production for the year 1895 are, aggregate value, \$1,659,968, consisting mainly of whitefish, trout, herring, sturgeon, bass, and pickerel. The number of lake fishermen was 3259.

Mineral Resources

Until recent years Ontario has been known almost solely as a province of surpassing agricultural resources

and of forest wealth, but of late years, and especially since the settlement of the western and northern boundary, the mineral wealth of the country has come prominently forward.

Commencing at the eastern portion of the peninsula, the Laurentian region has long been known to be rich in iron ores. The country around Ottawa city in both provinces possesses numerous localities where magnetic and hæmatite iron ores occur in immense masses.

The northern part of Hastings county and the adjoining region abound in iron, and great quantities of iron have recently been discovered in the district of Rainy river. The absence of coal is, however, a serious hindrance to the development of this industry. The ores are as pure as those of Sweden and Norway, and wood for charcoal is as abundant. The conditions are similar, but, so far, iron smelting has been a failure, and the only use made of the ores of Central Canada is to ship them to the United States to enrich lower grades of ore. This export business has now ceased as a result of a prohibitive duty, but the Ontario government passed an Act in 1896 to grant a bounty on iron smelted in the province, and a new start has been made at Hamilton during the last year. With this exception the great deposits of iron ore in this part of Canada are now unworked.

The eastern part of Ontario produces mica and phosphate of lime (apatite). The production of the former is increasing, but the export of phosphates has ceased owing to the discovery and competition of new fields very favourably situated for export on the coast of Florida. In the same region gold, silver, copper, and lead have been found, and valuable deposits of lithographic stone.

In the western part of the peninsula is the oil region. The seat of this industry is in the county of Lambton, where are about 5000 wells, and the value of oil products in the year 1895 amounted to \$1,806,237. Along the shores of Lake Erie wells of natural gas are very numerous. Many towns are lighted by them, and the gas is used for cooking and in manufactures. Pipes are extended across the international boundary, and the gas is used for heating and lighting in some of the border cities of the United States. The chief regions of production are Essex and Welland counties, but new localities are being continually found. In the latter county there is an aggregate daily flow of 30,895,000 cubic feet, and a pipe-line is laid to the city of Buffalo. The value of the gas produced in 1895 was \$423,032.

Along the shores of Lake Huron are the great salt wells of the Onondaga formation. They are found over an area of about 2000 square miles. The salt beds are at least four in number, and are at a depth of about 1000 feet. The beds vary in thickness from 20 to 100 feet, and the salt is brought up as brine by pumps in borings and is evaporated in pans. The value of the salt raised in 1895 was \$180,407

Mineral Resources of the New Ontario

As has already been stated, the New Ontario is, in the main, Laurentian; but there are very important deductions to be made; for all over it there exist large areas of Huronian rocks known to be metalliferous. The general distribution of detached Huronian areas over the Laurentian mass is being more and more recognised with the advance of exploration; but the largest single area is one extending along the north shore of Lake

Huron from Killarney westward to a short distance beyond the Sault Ste. Marie. The formation has a front of 100 miles on the strait north of the Manitoulin islands, and extends far back beyond the watershed until it comes out upon the Devonian and Silurian band around the southern shores of Hudson's Bay, a distance of about 600 miles. Other important areas there are, as for instance around Michipicoton Bay on Lake Superior, and in many places along the shore of the same lake. There are also bands in rear of Thunder Bay, along the Seine river, and between Rainy Lake and Lake of the Woods; and there is another area starting from the northern portion of the latter lake. All these areas run in bands generally south-west and north-east. There are many of them, and they are so irregular in shape as only to be described by a map. Their special significance is that they carry copper, nickel, galena, zinc, and gold. From the city of Ottawa to the Lake of the Woods there is a tract of 1000 miles of mineralised country 100 miles broad.

A group of rocks is found around Thunder Bay, and referred to the very base of the Cambrian formation to which the name Animikie has been assigned. It extends from Thunder Bay to Pigeon river and along the international boundary to Gunflint Lake; in fact to the height of land. This group is specially important as carrying silver, and another group is found around Lake Nepigon called Keewenian, containing native copper. These are the great rock masses containing the chief mineral wealth of the New Ontario.

Gold

Gold is found at many widely distributed points over an extensive area in Ontario—from Madoc and Marmora

in Hastings county to the north-west boundary of the province. It is not found as alluvial gold, but in the rocks, and is usually "free milling." It is thirty years since the Madoc mine was discovered, but the gold there was combined with mispickel, and the workings were after a while abandoned, because there was no suitable process for separating the gold. Recently discovered processes have been introduced, and the mines are now again being worked. Other deposits near Sudbury are now being developed, and mines along the shores of the Lakes Huron and Superior are being opened up and are beginning to make returns.

Although it had been reported by the Geological Survey, it is scarcely more than a year since it came to be generally known that the most important region for gold mining is in the district of Rainy river, and there, especially near Shoal Lake and Seine river, hundreds of locations have been recently taken up and are being pushed rapidly to development. Several mines have passed into the stage of paying dividends. Many locations have been taken up on Lake of the Woods, and one mine not far from Rat Portage is now settled down to the regular weekly production of a brick of metal with enough ore in actual sight to keep the stamps busy for years. All this business is so recent that exact statistics are not accessible. All that can be definitely ascertained is that in eleven months, ending with 20th September 1896, Ontario produced gold to the value of \$142,605, and that the average value of the ore milled was \$14.83 per ton.

Silver was discovered at Silver Islet in Lake Superior in 1868, and up to 1884 the amount of \$3,250,000 had been raised from that little spot alone. There are many other locations where silver is found, but the present

price is too low to induce any efforts to develop them. A mine of galena carrying silver has been worked near Sault Ste. Marie.

Copper has long been mined on the northern lakes at the Bruce mines and elsewhere. The best known locality now is Sudbury junction, where, in cutting for the Canadian Pacific Railway, large deposits were found of nickeliferous copper pyrites—sulphides of copper and nickel associated with pyrrhotite or sulphuret of iron. There are three or four mines in working at Sudbury. The quantity of nickel produced in 1895 was 3,888,525 lbs. of metal in the *matte*. The value of the metal was \$1,360,984, but, as it was exported in *matte*, the value entered outwards was the value at the mines, viz., \$521,783.

Cities

Toronto is the political capital and the heart of Ontario. It is situated on the north-west shore of Lake Ontario on a front of eight miles, between the mouths of the rivers Don and Humber, on an excellent harbour protected from the swell of the lake by a long low island. The city is on level ground, but in the rear the land rises in a terrace which was a former lake margin, and the belt of land along the terrace and in the valley and ravine is laid out in beautiful drives and parks. The city is well laid out, with streets at right angles, and is built up with substantial buildings. The residences are mostly detached with a little ground around them. They are not huddled together in terraces, and the city has, in consequence, a look as if there were plenty of room.

The first settlement at Toronto was in 1749, when the French built Fort Rouillé, named after the Count de Jouy, Minister of Marine and Colonies. It was intended

to check the communication between the Indian tribes of the north and the English traders from Oswego. The meaning of the name has been much disputed. It is argued by many that it means "place of meeting," but scholars in the Indian tongues like the Abbé Cuoq and Bishop Barega give the meaning as "trees in the water," probably from the fact that in approaching Toronto from the lake in a canoe the trees on a long, low spit of land seem to grow out of the lake. This spit of land is six miles long, and incloses a commodious and sheltered harbour. Of recent years the lake has washed a channel through the neck and made an island of what was a peninsula. The name of the landing-place for the portage to Georgian Bay was extended on the old maps over the whole country to which the route led, and so Lake Simcoe was Lake Toronto, and Matchedash Bay was Toronto Bay, and the river Severn which connects them was Toronto river.

When Governor Simcoe in 1793 fixed on Toronto as the site of the future capital of Upper Canada it was a wilderness. One Mississauga wigwam occupied the site of the city. The fort had been abandoned since the French evacuated it. Simcoe pitched his tent there and lived in it during the first winter. Men of the Queen's Rangers (his old regiment) cleared the site, and in 1797 the legislature removed there from Newark. The present euphonious name did not please the governor and he called the place York. It was not until 1834 that the name was changed back to Toronto. During the war of 1812-14 the town was twice taken and the public buildings were burned; but it was not occupied for more than a few days at each raid, for the attack was by expeditions over the lake. The invading army did not get so far.

Toronto is a great financial, commercial, and manufacturing centre, and its citizens are very active and enterprising business men. The harbour is always full of steamers and lake craft, and a large number of railways converge upon the esplanade on the lake front. The great systems, of course, make it a central point, but there are many lines originating in the city itself which stretch out in all directions—north, east, and west, and touch the shores of the great lakes at very many points. Few cities anywhere have such a railway service. The country around Toronto is rich in agricultural wealth and of itself would support a large city; but the trade of the city far overspreads the province and the business enterprise of its people extends over the whole Dominion from ocean to ocean.

The city is a very pleasant place of residence, for it has all the conveniences of the largest American cities. The electric-car service is excellent—there are nearly 100 miles of electric track—and the electric light and telephone systems are most complete. There is no lack of amusements, for there are theatres and large music-halls, and great artistes visiting America never pass Toronto.

The educational advantages of the city are complete. The schools are of course numerous and good, but the institutions of higher learning are also many and important. The University of Toronto is the especial care of the government of the province, and with this central institution twelve colleges are federated. The buildings are considered the finest group of university buildings in the Dominion if not on the continent. University College has a teaching staff of 73 professors and lecturers, and the students usually number 1300. In the paragraph on Education information will be found concerning the



PART OF TORONTO, LOOKING NORTH-WEST.

educational institutions of the city. A large and admirably managed free public library adds greatly to the attractions of the city.

As the capital of so important a province, Toronto is the centre of its political life, and the legislative and departmental buildings are very substantial and imposing. The centre of the immense educational system of the province and the chief Normal school is at Toronto, and there also is the chief Meteorological and Magnetic Observatory of the Dominion.

The foreign trade of Toronto for the year ending June 30, 1896, was—

Imports	\$20,275,400
Exports	4,178,332

The value of the manufactures produced was given for the last census year, 1891, as \$42,489,352.

The domestic trade of the city is very extensive, for it reaches over the whole Dominion; but as it does not pass through the Customs there is no way of gauging it. It is a banking and insurance centre, and the head offices of a number of large and successful banking institutions are situated there. The higher courts of law are at Toronto, so that it is the centre of the legal business of the province as well. Another and more pleasing advantage is that it is the centre from whence a very large number of attractive summer resorts may be readily reached. The Muskoka region and Georgian Bay and the upper lakes, Niagara Falls and Grimsby Park, and many resorts along the lake shore are conveniently accessible by the swarm of steamers in the harbour or the frequent trains from the stations.

As pointed out already one half of all the cities of the

Dominion, having a population of over 5000, are in Ontario. Only a few can be mentioned. Commencing on the east is—

Ottawa, population 44,154, the capital of the Dominion, situated on the river of the same name 120 miles west of Montreal at a point where navigation is arrested by the Chaudière Falls. It is the most important centre of the lumber interest in Canada. The enormous power developed by the fall of such a river as the Ottawa is utilised by immense saw-mills. The same power on the Quebec side at Hull is used not only for saw-mills but for paper and pulp mills and other factories. The Parliament and Departmental buildings (*see Frontispiece*) of the Dominion Government are very handsome, and, as the seat of Government, the city draws many visitors, especially during sessions of Parliament.

Kingston, at the foot of Lake Ontario, is situated on the best harbour on the lake, and is the oldest town in Ontario; for Frontenac built a fort and trading post there in 1673, and it is the only place west of Quebec which has any pretence of being fortified. The Rideau canal from Ottawa opens into the lake at Kingston. It was built as a line of interior communication in case of war. The Royal Military College—the West Point or Woolwich Academy of Canada—is situated here, and Queen's University, an institution in the front rank of the universities of Canada, is also at Kingston. The large lake craft tranship their grain by elevators at this point into barges which carry it down to the ocean vessels at Montreal. There are cotton and woollen mills, and factories of railway cars and locomotives. The population is given in 1891 as 19,264.

Peterborough is a city of 9717 inhabitants, situated on the Otonabee river in the Trent valley. Originally a

lumbering town, it has developed into a manufacturing centre because of the immense water-power generated by a fall of fifty feet in the river. There are woollen mills, flouring mills, bridge-building works, and railway car factories. Agricultural implements and all kinds of electrical supplies are made here, but chiefly it is



CHAUDIÈRE FALLS, OTTAWA.
(From Parliament Hill)

Patenaude, Photo.

celebrated all over the Dominion for making the "Peterborough canoe" the best canoe made anywhere. The city is the centre of a region of innumerable lakes and streams.

Hamilton is an important city situated on a sheltered bay at the head of Lake Ontario and at the foot of the Niagara escarpment. It is a very busy and a very well built city, with numerous large institutions and handsome edifices. Many important manufactures are carried on at

Hamilton, and its industries are more diversified than those of other cities in the west. It has a Free Public Library. The railway connections of Hamilton are very extensive, and being at the extreme head of the lake it is an important point of inland navigation. The population



Topley, Photo.

CHAUDIÈRE FALLS, OTTAWA.
(Winter view from the river bank)

was given in 1891 as 48,980, and the annual output of manufactured goods as \$14,044,521.

Brantford is a rapidly growing city, beautifully situated on the Grand river. In 1891 its population was 12,573, and the annual value of its manufactured products \$4,280,999. It has manufactures of machinery and hardware, of bicycles, carriages, binder-twine, and stoneware, and has also cotton and woollen mills. It is named after Brant, the great and humane Mohawk chief,

whom Thomas Campbell slandered in his *Gertrude of Wyoming*.

The mammoth comes, the foe, the monster Brandt
With all his howling desolating band.

The poet made an apology, but it is in a note at the end of the poem where few see it. It is evidently less important to tell a lie than to spoil a poem. Brant was not at Wyoming at the so-called "massacre."

Galt is another city on the Grand river, whose name commemorates John Galt the author of *The Ayrshire Legatees*, and other novels very popular in their day. It has a population of 7535, and is noted for its manufactures of edge tools, machinery, woollens, and other articles to the amount of \$2,621,310 annually.

Guelph is on the Speed, a tributary of the Grand river, and a fall of 30 feet gives it abundant water-power. The population in 1891 was 10,539. It is the seat of the Ontario Agricultural College and the centre of a very rich farming country. There is an experimental farm attached to the college, and the number of students is usually about 115. There is a very effective, scientific, and practical teaching staff. Agricultural implements, woollens, carpets, sewing-machines, and organs, are the chief manufactures.

London on the Thames is a city of 31,977 inhabitants, the centre of the richest farming district in the west, and reaches out by many railways over the peninsula. It has many industrial interests, iron foundries, machinery works, breweries, chemical works, musical instruments, and many factories of other kinds. The country around is very beautiful, and it is known as the "Forest city" because of the park-like appearance of the surrounding country. Many large institutions, educational and

financial, are situated at this central point. The annual output of its factories is given at \$8,225,957.

Woodstock on the Thames is another agricultural and manufacturing centre. The country round is exceedingly rich, and it has more than the usual educational advantages, even in Ontario. Organ and piano factories, woollen mills, and many other industries are carried on here. The population in 1891 was 8612.

Sarnia (pop. 6693) is a growing town on the St. Clair river celebrated for having one of the greatest tunnels in the world. It is the link connecting the Grand Trunk Railway of Canada, at Port Huron, in Michigan, with its branch to Chicago. The tunnel is under the St. Clair river and is 21 feet in diameter and 6025 feet long. The walls are of cast iron segments bolted together. The approaches are 5600 feet in length. The cost was \$2,700,000.

Windsor (pop. 10,322) is a point of many converging roads, and freight and passenger cars are ferried across to Detroit on immense barges. The boats are so powerful that even in the depth of winter they are uninterrupted by ice. During the season of open navigation on the lakes, lines of steamers start from Windsor for the upper lakes. The city is lit by natural gas found near.

Owen Sound is a town on an inlet of Georgian Bay of the same name (pop. 7497). It is on the best harbour on the lake, 12 miles long by 5 miles wide, and is the terminus of one of the Canadian Pacific Railway systems. The steamers in connection with that railway leave Owen Sound for Fort William on Lake Superior.

Some of the cities and towns owe their prosperity to the fact that they are the centres of converging railways such as Stratford (pop. 9501) and St. Thomas (pop. 10,370); others are centres of rich farming districts, as

Chatham (pop. 9052) and St. Catharines which is the centre of the fruit-growing industry. Manufactures naturally spring up at such points. Others are terminal points of great railway systems on the lakes, such as Goderich on Lake Huron, Owen Sound and Collingwood on Georgian Bay, where there are elevators and facilities for transhipment.

Many other cities and towns might be mentioned if space permitted. They are abundantly furnished with the conveniences met with in the large American cities. Electric roads and light, telephones, schools, churches, and places of amusement, and they are all well administered under the excellent municipal laws of Ontario.

In the old days, before the railway system obtained its present large development, ports such as Cobourg, Port Hope, Whitby, and similar places on the shore of Lake Ontario, were the chief towns, but now the railways are passing through the heart of the country, and the inland towns are becoming more important centres of business. Toronto and Hamilton are great railway centres as well as points of inland navigation, and are growing very rapidly, but some of the lake ports are losing their comparative importance.

NOTE TO CHAPTER XIII

A great many books have been published on the resources of Ontario, but the province is advancing rapidly, and the best sources of information are the annual reports of the departments of the provincial government. Among them are the following :—

- Annual Report of the Bureau of Mines, Toronto.
- Bulletins of the Bureau of Mines, Toronto.
- Bulletins of the Bureau of Industries.
- Department of Agriculture, Annual Reports.

These valuable reports contain all accessible information concerning the agricultural and mineral industries of the province brought down to the latest date. The last report on agriculture is in 2 vols., 8vo., 1896, published in Toronto.

Documentary History of Education in Upper Canada, by J. George Hodgins, M.A., LL.D., Toronto. 3 vols., 8vo., 1894-95.

Report of the Royal Commission on the Mineral Resources of Ontario. Toronto, 1890.

Reports of the Royal Commission on Forest Reservation and National Park. Toronto, 1893.

Many of the books mentioned in the notes to previous chapters, refer also to Ontario.

The geology of the older part of the province was the subject of the labours of the earlier years of the Geological Survey. The results are contained in the large volume published at Montreal in 1863, "Geology of Canada." Later researches have reference mainly to the "New Ontario." The reports arranged by localities are as follows:—

CENTRAL AND EASTERN COUNTIES.

H. G. Vennor, 1869, 1871, 1872-75, 1877. Thomas Macfarlane, 1866.

R. W. Ells, 1894. F. Adams, 1893.

WESTERN PENINSULA.

T. S. Hunt, 1869, 1877.

UPPER OTTAWA AND NIPISSING.

W. M'Quat, 1873. A. E. Barlow, 1893-94.

BASIN OF JAMES BAY.

R. Bell, 1871-72, 1876-78, 1891, 1893, 1894.

LAKE HURON AND GEORGIAN BAY.

R. Bell, 1866-69, 1877, 1891, 1893-94.

LAKE SUPERIOR.

Thomas Macfarlane, 1866. R. Bell, 1869, 1871-72, 1873, 1876-77, 1882. E. D. Ingall, 1888. W. M'Innes, 1894.

LAKE OF THE WOODS AND ENGLISH RIVER.

Dr. Selwyn, 1873. R. Bell, 1873, 1882-84. A. C. Lawson, 1885-88. W. H. Smith, 1891. W. M'Innes, 1891-93.

CHAPTER XIV

MANITOBA AND THE NORTH-WEST TERRITORIES

WE come now to the great interior plain extending from the international boundary line of lat. 49° N. to the Polar Ocean. It is contained between the great prolongation to the north-west of the Laurentian nucleus, previously described, and the Rocky Mountain range. The Mackenzie river basin forms the northern portion of this enormous plain, and it includes the provisional district of Athabasca; the remaining portion contains the greater part of the province of Manitoba and the territories of Assiniboia, Saskatchewan, and Alberta. The present chapter will treat of the latter portion only, which might almost be called the Winnipeg basin. The former, or the Mackenzie basin, will be more conveniently considered separately. The physical conditions of Manitoba and the three last mentioned territories are similar, and they are politically divided by lines of survey only, not by geographical features. It will therefore avoid repetition to take them together in their general characteristics before dwelling upon those few points in which they differ.

The area of the territories now in question is almost entirely contained within two low water-partings very nearly upon the lines of lat. 49° and 54° . On the



south the drainage basin of the Missouri projects across the boundary line over about 20,000 square miles. At the extreme north-west corner there is an area belonging to the Mackenzie basin and a portion of the drainage basin of the Churchill river extends south of 55° ; the Laurentian country, moreover, invades the eastern border, but for ready comprehension the territories now in view may be considered as an immense parallelogram contained within the parallels of 49° and 55° and the meridians of 95° and 119° , or 24° of longitude by 6° of latitude. The chief characteristic of the area is that of an immense ocean-like plain, treeless at the south but gradually becoming forest-clad at the north—first by scattering islets of poplars, then by park-like expanses intermixed with prairie, and passing, lastly, into a region of coniferous forest land. The edge of true forest commences in Manitoba about the Duck mountains, and extends north-west to the forks of the Saskatchewan, thence westerly, approximately along the northern water-parting north and west of Edmonton, then south-west to the foot-hills of the Rocky Mountains where the forest line turns to the south. The whole area is about 376,683 square miles in extent, as large as France and Spain, and of that about half is prairie land—green with grass in the spring, gay with wild flowers in early summer, and yellow-brown with self-cured hay in autumn. That was its aspect in its wild state before the settlements commenced; but, whether the western sun goes down under a horizon of wheatfields or wild prairie grass, it has the same appearance of sinking in an ocean of which the long undulations of vegetation are the waves. It impresses the traveller from settled countries with a feeling of loneliness and immensity; for the settlements seem lost as are ships upon the ocean.

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The whole interior plain of Canada slopes with a very gentle descent to the north, and the area in present consideration slopes also very gradually to the point of discharge at the outlet of Lake Winnipeg on the north-east, to which all its waters quietly converge to be carried thence by the Nelson river into Hudson's Bay. The initial elevation of the interior plain is slight, and the distance to the oceans, whether of the north or east is great; hence the rivers flow with a tranquil current and the whole region is permeated with waterways separated by very low divides from adjacent river systems. This immense plain is in the very centre of the continent. Winnipeg, its commercial capital, is in long. $97^{\circ} 8'$, within a few miles of the half-way point between St. John's, Newfoundland, $52^{\circ} 42'$, and the boundary of Alaska at long. 141° W.

Two lines of elevation running north-west and south-east divide the plain into three parts, called respectively the first, second, and third prairie steppes. They run diagonally across the territory. The first prairie steppe is wholly contained within Manitoba—the second comprises the south-west half of Manitoba, half of Assiniboia and three-fourths of Saskatchewan—the third, the remainder of those territories and all of Alberta to the foot-hills of the mountains.

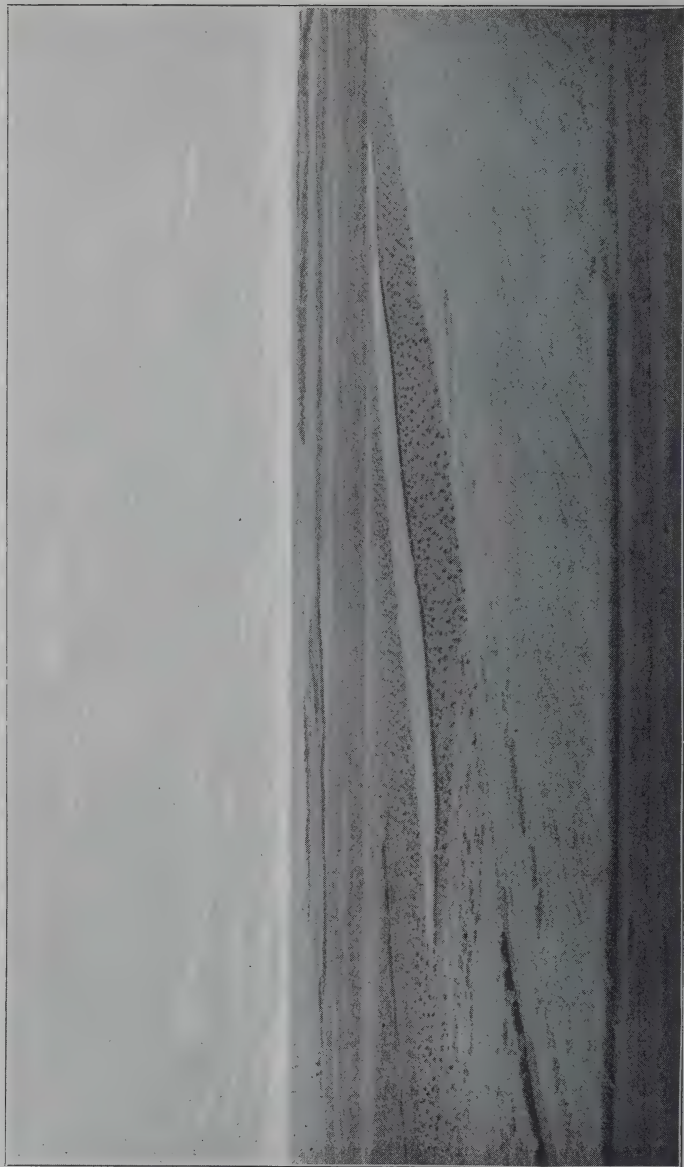
The First Prairie Steppe

The first prairie steppe is bounded on the east by the Laurentian country, marked by the line of the eastern shore of Lake Winnipeg produced to the south beyond the parallel of 49° ; and, on the west, by a low escarpment nowhere more than 500 feet high. This escarpment crosses the international boundary at the Pembina

mountains about 40 miles west of Red river and continues north-westwardly as the Riding mountains, the Duck mountains, the Porcupine hills, and finally reaches the Saskatchewan river as the Pasquia hills. Wide valleys are cut through this escarpment by the rivers flowing east—the Pembina, Assiniboine, Swan, and Red Deer rivers.

Between the east and west boundaries above described is a flat alluvial plain having an elevation at the international boundary of 800 feet above the sea. Through it flows the Red river northwards to Lake Winnipeg, which is 710 feet above the sea. The plain, where it crosses the frontier, is 52 miles wide and widens out at the north to 250 miles to include the large lakes. It is composed of a black vegetable mould from two to four feet deep, resting on a marly clay subsoil—the bed of an ancient lake. The southern part of the plain, being higher, is also drier and more productive; for the land on the southern margins of the lakes is low and swampy. This first prairie steppe contains about 6900 square miles of land, of which one-half, or 3450 square miles, is probably the richest agricultural land in the world.

Geologists show that in quaternary times an immense glacial lake covered all this region. It extended far into Minnesota and included all the basin of the Red river and the Lakes Winnipeg, Manitoba, Winnepegosis, Lake Dauphin, Lake of the Woods, and all the smaller lakes around them, over an area of 110,000 square miles. The western escarpment shows in places a number of distinct terraces rising one above the other and marking the ancient levels. The outflow to the north is supposed to have been blocked by an ice cap extending south from Hudson's Bay, and all the water passed southward by the Mississippi. As the glacier contracted under the



THE PRAIRIE, MANITOBA.

genial conditions of the existing period, the lake level was lowered; until, at last, new outlets were opened to the north and the drainage followed the northern and lower channel. As the water withdrew into the lowest depressions the lakes assumed their present proportions. The previous great lake, and much that is now dry land, has been designated by geologists as "the glacial Lake Agassiz." The unscientific find the theory interesting as accounting for the rich wheatland of the Red river valley.

The Second Prairie Steppe

On ascending the escarpment to the west it is seen to be—not a mountain, but the edge of another plain—the second prairie steppe. This plain is 250 miles wide at the parallel of 49° . It is a region of rolling prairie, where hills rising 200 to 300 feet above the surface are called by such names as Touchwood hills and Moose mountain, for their height is exaggerated to the eye by the immensity of the level land. It is bounded on the west by another escarpment. This latter elevation crosses the frontier as the Missouri Côteau at about long. $103^{\circ} 30'$ and continues away to the north-west, parallel to the first escarpment, under various names—as the Vermilion hills, the Côteau, the Bear hills, and the Eagle hills. It has an approximate area of 105,000 square miles, of which two-thirds are prairie. The average elevation of this plain is 1600 feet. The soil is for the most part excellent, and while it may not be quite equal to the best part of the Red river valley, some of the largest and most productive farms of the north-west are situated within it.

The Third Prairie Steppe

The third prairie steppe has, at the international boundary, a width of 465 miles. Its western limit is the Rocky Mountain range. At its eastern edge the elevation is 2000 feet, but, as it slopes up to the foot hills of the Rocky Mountains, it rises, and in the south-west corner attains its highest elevation, 4200 feet above the sea. The surface is more irregular than that of the others, and several detached plateaus rise 2000 feet above the surrounding plain, of which the most important are known as Wood mountain and the Cypress hills. These are the only elevations worthy of mention in all the region in question. Very little of it is covered with forest. Wood mountain and the Cypress hills are to some extent wooded, and, at the north, the line of true forest comes down as far as the head streams of the North Saskatchewan. It is better suited for pasture than for farming, although, besides the irrigated land in the valleys, there are very good farm lands at Red Deer river, and thence north to Edmonton. At the south and west the rainfall is deficient, and irrigation is requisite to secure certainty of crops. It is known as the ranching country, and if timber is absent on the surface it is very generally underlaid with coal or lignite, which at the west becomes true bituminous coal, and in the eastern slope of the mountains develops into an area of excellent anthracite.

Geology

The Laurentian system of hard crystalline rocks has been stated to extend into Manitoba as far as the eastern shore of Lake Winnipeg. It is bordered on the west by a belt 60 to 120 miles wide of Silurian and Devonian

limestone. These formations stretch away to the far Arctic sea in a north-west direction. Limestones of these systems form the western shore of Lake Winnipeg, and extend along the other lakes to the west. Upon these rest the comparatively soft rocks of the Cretaceous and Laramie formations which characterise the area of the great interior plain. Palæozoic limestones representing those of the Winnipeg region reappear in the Rocky Mountains, and it is probable that they are continuous beneath the greater part of the plains. The Cretaceous and Laramie rocks of the plains are themselves almost everywhere covered by thick deposits of "drift" or clays, sands, silts, and gravels, due to the glacial period. Upon these the character of the soil largely depends.

Where these drift deposits are cut through in the banks of the larger rivers and streams, the Cretaceous and Laramie rocks are seen in flat-lying beds, occasionally holding seams of lignite or coal. Being quite conformable to the Cretaceous, the Laramie may practically be considered an upper part of that formation, although palæontologically it nearly bridges the gap usually recognised between the Cretaceous proper and the Eocene, or earliest Tertiary. Some beds in the Cretaceous or Laramie abound in fossil plants and molluscs, while Dinosaurian bones occur in others.

Coal is the principal mineral worked throughout all this region. ~~Gold~~ is found on the Saskatchewan and some other rivers. There are deposits of iron, but they are not utilised. Coal is mined at Edmonton, on the North Saskatchewan, and near the Souris river on the southern boundary. The Lethbridge mines are extensively worked, and export largely to the United States at the south. The mines at Canmore, in the Rocky Mountains, are also worked extensively, and also the mines at An-

thracite, higher up. By a law recently passed, settlers are allowed to take away what they require for their own use of coal cropping out anywhere over the territory on the ungranted lands of the Crown, by paying a royalty of 10 cents for lignite, 15 cents for bituminous, and 20 cents for anthracite coal, per ton.

Hydrography

In early days the rivers were the main arteries of trade; but they have been in recent years supplanted by



Dr. Bell, Photo.

LOOKING DOWN RED RIVER, NEAR LOWER FORT GARRY.

railways; and, as the light-draught steamers with their tows of barges supplanted the canoes of the voyageurs, so have they, in their turn, made way for locomotives and trains of cars. Nevertheless, the hydrography of the country continues to be a most essential study; for it is the key to its history.

The best known river of the prairie region is the Red

river of the North, an important stream flowing from its source in the state of Minnesota directly north across the parallel of 49° at Pembina, and, after a course of 100 miles in Canadian territory, falling into Lake Winnipeg. The river is very tortuous, and winds through a bed which it has cut in stiff clay, 30 to 40 feet below the level prairie. For 50 miles from the frontier the banks are wooded. The city of Winnipeg is situated at the junction of its chief affluent, the Assiniboine. It is navigable for steamers from Winnipeg up to Fargo in the United States, about 220 miles south on the Northern Pacific railway. North of Winnipeg the navigation is impeded by the St. Andrews rapids, and the river falls into the lake through a swampy delta. Its total length is about 700 miles, and, its course being north, it is subject to flood; for in early spring the water is released at its sources before the ice has given way at its mouth.

The other rivers of the interior plain have a general course from west to east and flow into the Red river, or into the great lakes of the Winnipeg group at the north. One general characteristic distinguishes them from the rivers of eastern Canada, and that is, they do not flow nearly level with their banks, but have cut through the softer materials of the western plains deep and broad valleys, often two miles wide, at the bottom of which they wind from side to side in their tortuous courses. There is often a descent of several hundred feet to the levels of the streams, and the great plain is graven with such river furrows; so that travellers are surprised by coming suddenly upon a river flowing at the bottom of one of these steep-sided valleys, where at a little distance the prairie seemed to be a continuous level surface.

The chief tributary of the Red river is the Assiniboine, an important stream flowing in at Winnipeg. The

Assiniboine flows through some of the most fertile land in the north-west. It is not a large river, being about 120 yards wide at the confluence, but it retains that width for a long distance up. It is over 350 miles long, and rises north of Fort Pelly. It flows at first south to a point 35 miles west of Brandon, where it turns to the east. At Brandon it is joined by the Qu'Appelle, a stream with a course of 200 miles, and lower down, at Milford, is the junction of the Souris. This last stream flows along the edge of the Missouri Côteau into the United States, then recrossing the boundary it passes through a fine farming country to join the Assiniboine. These streams are not wide but are from three to four feet deep, and before the railway age were, excepting the Souris, utilised for transport. They, with their branches, water Manitoba and eastern Assiniboia.

North of these flow the double streams of the Saskatchewan with its affluents; rising in the heart of the Rocky Mountains, and falling into the northern end of Lake Winnipeg. The main river, taken together with the south branch, has a length of 1032 miles. The North Saskatchewan is 481 miles from its source to the forks, and the only rapids are close to its discharge from Cedar Lake into Lake Winnipeg; above this obstruction, called the Grand Rapids, navigation is continuous to Edmonton. The Hudson's Bay Company have had stern-wheel steamers on the river since 1877, but by boats the navigation might be continued 150 miles farther to Rocky Mountain House. The North Saskatchewan, above the forks, passes through a very fertile farming country. The water-parting of the Churchill and of the Mackenzie basin is not far distant, and the southern border of the true forest land is also very near. From Cumberland House, near the Great Bend, the canoe route led up by Frog

portage to the Churchill, and, by following up that stream, the old voyageurs reached the Methy portage and the great Mackenzie system by the Athabasca river. Goods are now taken by rail from Calgary to Edmonton, and over a road 90 miles long to Athabasca landing on the same river. The head waters of the North Saskatchewan and the Athabasca are very close to each



THE NORTH SASKATCHEWAN, NEAR EDMONTON.

other, for they have their springs in the neighbouring glaciers of Mounts Brown and Hooker. The chief tributary of the north branch is the Battle river, falling in at Battleford.

While the northern branch flows through the open park country at the north, the South Saskatchewan flows through the great plain at the south. The Bow river, rising in glacial lakes a few miles north of the Wapta pass, and swollen by a tributary from its summit, and the Belly river, rising in the South Kootenay pass, unite at the grand forks to form the South Saskatchewan. The

Bow river is followed by the Canadian Pacific railway to the summit of Wapta (Kicking-horse) pass. The Red Deer river is also an important tributary. All these streams and the South Saskatchewan itself flow through a pasturing country, the region of the great cattle ranches. The land is rich; but the rainfall is deficient at the south, and irrigation works are being constructed to distribute the water of these rivers over the lower portion of the plateau.

Lakes

The drainage of the immense area under consideration is collected, preparatory to being discharged by the Nelson river into Hudson's Bay, by a remarkable group of large, irregularly shaped lakes—the deeper basins of the great lake of the quaternary age before referred to. Lake Winnipeg, the largest of the group, is 260 miles long, and its breadth varies from 5 to 65 miles. Its area is 9400 miles, and its depth varies from 42 to 90 feet. The Red river flows in at the south, and at the north-west corner all the water collected by the Saskatchewan in its double course from the Rocky Mountains, pours over the Grand Rapids from Cedar Lake into this great reservoir. It receives many tributaries from the Laurentian country on the east, and in the south-east corner the Winnipeg river, a turbulent stream, discharges all the water collected by Lonely Lake and Lake of the Woods in the rough wilderness of lakes and streams bordering on the west and north shores of Lake Superior. The overflow of Lake Winnipeg is by a very narrow channel at the north-east corner, near Norway House, and, after passing through many lakes, the water shapes itself into the sea-like flood of the great Nelson river.

The coast at the south is very marshy,—the delta of the Red river is a reedy wilderness,—but it is nowhere high, neither on the Laurentian or east side, nor on the west or Silurian side. Lake Winnipeg in a storm, when the wind blows up or down the lake, is a very serious piece of water, and the best course is to find shelter as soon as possible. The height of the lake is only 710 feet above the sea.

Lake Manitoba has given its name to the province. It is 122 miles long and from 5 to 24 miles wide, and it covers an area of 1850 square miles. It is a shallow lake with low shores, and the coast at the south is very swampy. It is 810 feet above the sea, and is connected with Lake Winnipeg by the Dauphin river and through St. Martin's Lake. Manitoba is the Cree name for the narrows, and the name originally signifying "spirit narrows" has been extended to the whole lake and to the province.

North of Lake Manitoba is Lake Winnipegosis, of very irregular shape, covering an area of 2080 square miles. It is 130 miles long and, in many places, 27 miles wide, and is 828 feet above the sea. It is fed by many small streams from the west and by the overflow of Lake Dauphin (840 feet) through Mossy river. The outlet of this lake is into Lake Manitoba by the very indirect way of Waterhen river through Waterhen Lake, and is not apparent on the first glance at the map. The total area of this group of lakes is 13,500 miles.

Manitoba and the adjoining territories contain many other smaller lakes. Some of those in the plains have no outlet and the inflow is balanced by evaporation. These lakes are necessarily saline. The largest are the Old Wives' Lakes, or, more euphoniously, Lakes Chaplin and Johnson. From Chaplin to Ernfold station the Canadian

Pacific railway runs along the shore of the northernmost of these lakes. All the lakes throughout the whole region are the resort, in their season, of immense numbers of waterfowl.

Climate

Over all the immense area treated of in this chapter the climate is practically the same—a continental climate of cold winters and warm summers, for it is in the very heart of the continent, far from the influence of the ocean. Clear blue skies are never absent in summer or winter, and, if the cold is sharp, it is never damp and raw. The leading facts concerning the isothermal lines extending over the whole Dominion have already been given, but there are some peculiarities of these central interior plains which seem almost paradoxical to residents on the seaboard.

Those who have lived in a maritime country only cannot realise how greatly humidity increases the effect of cold upon the system. There is not so much bodily inconvenience from a temperature of -10° in a dry climate as from one of $+32^{\circ}$ in a moist one. The climate of these territories is always dry in winter. The snowfall is from 18 inches to two feet and there is no rain or thaw to pack it. The snow lies dry as sand under the feet. The air is clear and the sun is bright throughout the winter days, and there is a great quantity of light reflected from the white covering of the ground. The houses are built to resist the frost, and they are warmed, and lighted, and supplied with water as easily at -30° as in any city on the seaboard where the mercury may never fall below $+10^{\circ}$. The people are clothed to suit the climate, and, in the country, the winter roads are convenient for travel. In summer the

nights are cool, and the humid heat often experienced on the seaboard is never found upon the central plains. These plains are not high table-lands like the plains of Central Asia, but there is one immense reach of level country sloping down gently to the Arctic Ocean for 2000 miles, with a very low initial elevation; for, as has been stated, the elevations of the three prairie steppes at the frontier are only 800 feet, 1600, and 3000 feet respectively. As one travels south the land rises, and hence the paradox that here the cold does not increase in proportion to the latitude.

From these conditions arises another paradox, that the spring opens earlier at Winnipeg in lat. $49^{\circ} 52'$ than at Montreal in lat. $45^{\circ} 30'$. It opens as early at Edmonton in lat. $53^{\circ} 35'$ and at Dunvegan on the Peace river in lat. $56^{\circ} 08'$, so that in a north-west line from Winnipeg the rivers open and the crops may be sown simultaneously through ten degrees of latitude. The following table of the dates of opening of navigation will illustrate this:—

OPENING OF NAVIGATION—1883 TO 1889; EARLIEST AND LATEST DATE

Place.	Latitude.	Earliest.	Latest.
Toronto, Lake Ontario . . .	$43^{\circ} 38'$	March 20	April 25
Charlottetown, P.E.I. . . .	$46^{\circ} 13'$	March 30	April 22
Fort M ^c Murray, Athabasca river	$56^{\circ} 40'$	April 9	May 4
Winnipeg, Manitoba	$49^{\circ} 52'$	April 14	April 28
Montreal	$45^{\circ} 30'$	April 22	May 5
Quebec	$46^{\circ} 48'$	April 23	April 30
Fort Simpson, Mackenzie river	$61^{\circ} 52'$	May 1	May 14

In a series of years, from 1814 to 1889, the port of Quebec was open only once as early as April 14. In thirty-five years the port of Montreal was open only seven times before April 14. The point will be illustrated further by giving the lowest temperature recorded in the month of April, 1895, in various places, commencing with the

lowest as follows: Quebec, 10° ; Charlottetown, P.E.I., 16° ; Montreal, 16° ; Winnipeg, 19° ; Calgary, 20° ; Halifax, N.S., 20° ; Toronto, 23° ; Edmonton, 23° . Thus it appears that the spring was as far forward in Edmonton on the North Saskatchewan in lat. $53^{\circ} 14'$ as at Toronto on Lake Ontario in lat. $43^{\circ} 38'$, and that there was a parity of temperature between Halifax, Nova Scotia, and Calgary on the Bow river in Alberta. The difference is not in the opening but in the closing of navigation, for the eastern rivers remain open later than the western.

So far as the crops are concerned, the severity of the winter is of no consequence; the essential requisite is that the summer be long enough and warm enough to ripen the grain. In the high latitudes and long clear days of the north-west, wheat matures in 90 to 93 days. On the upper Peace river the snow is away the first week in April, the wild anemones blossom on the 20th, and, on the same date, the mosquitoes begin to appear.

This suggests mention of another paradox. In the east, when the snowfall is heavy and often packed by thaws, the farmer waits until the snow melts and the frost is out of the ground and the ground is dry—then he commences seeding. Not so in the north-west. The snow soon goes, for it is light and never packed. As soon as six inches of the soil is thawed, the grain is sown, nor is the farmer careful how or when the frost comes out of the ground. As the frost relaxes under the warm sun, moisture to feed the young roots is provided lower and lower down in the earth. Seeding, therefore, commences much earlier in the north-west than in the east,—in Manitoba usually in the first week in April, and a traveller at Dunvegan, on the Peace river in 1883, saw the wheat sown on April 16. The first fortnight of

April is the general period of sowing all over the north-west, and vegetation gets a long start over the eastern provinces. The trees are breaking into leaf and the wild flowers are blooming as early at Dunvegan in lat. 56° as at Montreal in lat. 46° .

There is still another paradox in the way the native horses and cattle are turned out for the winter, unhoused and unfed, and are caught in good condition in spring. In this way immense herds of cattle in the ranching country become possible. The countless thousands of buffalo which roamed the plains in former days found food all winter, and the Indians never provided shelter or hay for the numerous horses they owned, for the plain Indians were all equestrians. In the east the grass, if left uncut, seeds and decays and becomes worthless in the rain; but in the north-west the native prairie grass is self-cured by the dry weather of the fall and is just so much nutritious standing hay. The winds blow off the light fall of dry snow, and horses may readily scratch it away with their hoofs, and so their food is uncovered. Farther south, where the snow is hardened and becomes ice by rain and thaw, the hoofs of the animals would be worn to the quick and they would perish. For this reason, in former years, immense herds of buffalo migrated to the north in winter, and found all the food and shelter they required in the region now known as Alberta.

There is yet another paradox in what are known as the Chinook winds. These are warm and dry winds blowing down from the snow-laden and glacier-crowned summits of the Rocky Mountains—blowing with considerable force, from time to time, through the winter, and licking up every vestige of snow from the plains of Alberta. The snow is not thawed by these winds, it is simply evaporated. A Chinook wind will take up the



FARM SCENE—REAPING, PILOT MOUND, SOUTH MANITOBA.

snow without manifesting a trace of dampness on the smooth face of a stone. These winds make Alberta so pre-eminently a ranching country; for though the snow may fall it will lie only until the next Chinook, and that, in a few hours, will clear every vestige away from the standing self-cured hay on which the cattle feed.

The singular properties of these winds have excited much speculation. It was not that similar conditions were unknown elsewhere, but because of the magnitude of the area over which they extended in the north-west of Canada. Their influence is felt as far east as Regina, and far to the north also in the Mackenzie valley, but the phenomena are most pronounced in Alberta. Dr. G. M. Dawson, of the Geological Survey, has pointed out their identity with the winds known in Switzerland as *foehn* winds, and they are accounted for thus. In the chapter on British Columbia it will be seen that, north of the Pacific trades, there is a prevailing return current of westerly winds blowing over the broad ocean and arriving on the north-west coast of America laden with warmth and moisture. They encounter in British Columbia three mountain ranges—upon the first the larger portion of their moisture is precipitated, and the enormous cedars and firs of Vancouver Island and the main coast are the result of the abundant rainfall. Passing over the Coast range a further precipitation takes place upon the Gold ranges, and the last and loftiest range—the Rocky Mountains—deprives the winds of the last drop of moisture.

There is thus a prevailing eastward pressure from across the ocean, and this produces effects in addition to the copious rainfall on the western slopes. It is a well-established law that for every 300 feet of elevation air becomes one degree Fahrenheit colder. This is

explained by the fact that when forced to rise, as in this case, against a mountain barrier, the air, by expanding as it reaches higher levels of lesser atmospheric pressure, is mechanically cooled, or, in other words, a part of its heat is rendered "latent," and it parts with its moisture to the point of saturation at the temperature at the summit of the mountains. The condensation of moisture during this ascent retards the cooling effect, and enables the air to reach the summit at a higher temperature than would otherwise be possible. Meanwhile, much of the moisture is lost as rain along the western slopes. In descending again to the eastward a converse action occurs. The air is mechanically warmed by the increasing pressure. Any condensed moisture in the form of cloud is absorbed at once, and as the air continues to descend with increasing warmth, its capacity for absorbing moisture also increases, but remains unsatisfied. It thus reaches the lower country as a relatively warm and very dry wind, particularly in winter.

This effect is most pronounced upon the seaward range, but is repeated to a greater or less degree at each succeeding range passed over, each of which has thus a relatively dry side. The Rocky Mountains is the last and loftiest of these ranges, and thus it happens that the western winds blowing over the summits of these snow-crowned mountains arrive at the ranches of Alberta as warm dry winds, and the warmth of the western ocean is as it were siphoned over the mountains upon the eastern plains, and the climate of Alberta, and, to a less degree, of the whole north-west, including the Mackenzie valley, is ameliorated.

These peculiarities of the climate of the great central plain have been called paradoxical, because they are contrary to the experience of men living in maritime

regions. They are by no means anomalous, for, when those newly opened territories are inhabited by people familiar with them from childhood, such conditions, strange to an immigrant, become normal and familiar. They are paradoxical only in relation to the received opinions of settlers and travellers from the seaboard.

In considering the climate reference must be made to the amount of precipitation, for upon that the growing crops ultimately depend, and this varies much as the mountains are approached. In southern Alberta and western Assiniboia the annual precipitation is insufficient to ensure invariable success. During the last year irrigation has been extensively introduced. There are about 80,000 square miles which require irrigation, and, in southern Alberta, the streams descend from high levels and are readily distributed over lower land. The soil is very fertile, and it is covered with nutritious native grasses, but cultivated crops require a steadier supply of moisture. At Calgary the annual precipitation is 12·38 inches, at Chaplin it is only 6·44 inches, and at Regina 8·38 inches. In the dry country south of Regina irrigation is not so easy, for the streams flow in valleys deeply cut below the general surface of the country. The result of all the observations from 23 stations is summed up by the Meteorological Service in a statement that the mean annual rainfall throughout the North-west Territories is 13·36 inches, of which 70 per cent falls between April 1 and September 30. In Manitoba the mean annual rainfall is 17·43 inches, of which 74 per cent falls between April 1 and September 30.

It has been previously noted that many of the smaller lakes, when they have no outlet, are brackish or salt. There is a small area on the southern boundary known as the Alkali plain, in the shape of a triangle based upon

the parallel of 49°. It is a projection into Canada of the Missouri drainage basin. On the west it is bounded approximately by the Cypress hills and Maple creek, and the apex of the triangle reaches the line of the Canadian Pacific railway at two or three stations adjacent to Chaplin. This region is not suited for farming or even for grazing. The whole of it is between the railway and the boundary, and is in the locality of the Old Wives' Lakes, previously noted as saline.

The following extract from the official return of the Meteorological Bureau for the month of April, 1897, will be a practical comment on the preceding remarks. The dates are all in April of this year:—

Edmonton reports :—The season is the most favourable for years, seeding is well advanced, some grain is up and trees are in leaf. Calgary—Snow has disappeared, the river is low and free from ice, seeding is well advanced. Medicine Hat—Seeding finished, grain sown early now above the ground. Battleford—Vegetation is slow considering length of time since snow melted. Prince Albert—Seeding is general in this district, little water in the sloughs, river opened on the 19th and is very high. Qu'Appelle—Seeding almost finished, spring birds have arrived, grass turning green. Minnedosa—Ploughing on 12th, seeding on 14th, wheat nearly all sown. Snow gone, no floods, vegetation progressing most favourably, wild geese on the 4th, ducks 10th, blackbirds numerous. Regina—Trees budding and leafing, grass showing green, anemone in flower on the 18th, ploughing on light lands commenced on 13th.

Forest

It has been stated on a previous page that the line of the southern limit of the true forest extends from the Duck Mountains in Manitoba round by the north of the North Saskatchewan to the foot hills of the Rocky Mountains. South of this line the trees gradually disappear, clinging to the hills and to the river valleys, and cluster-

ing in clumps round the pools and moist places, until at last the plains at the south become destitute of trees. Much speculation has arisen concerning the treelessness of these plains, whether it was the result of a deficient rainfall, or whether it is due to the custom of setting fire to the prairie, which has been practised by the Indians from time immemorial, as shown by the blackness of the surface soil. While it is doubtful whether large portions of these prairies were ever covered with forest, it appears certain that the fires have extended the treeless area very considerably. This area was estimated by Dr. G. M. Dawson to include, in 1873, about 192,000 square miles. The object of the Indians usually was to burn up the old grass to make way for the young growth, and the early settlers imitated them and used to set fire to the prairie in late fall or early spring. Even now prairie fires sometimes do much damage, although the settlers arrest their spread by ploughing fire-guards of a few furrows of turned sod around their property. The experimental farms established by the Dominion Government distribute large numbers of young trees to all farmers who will undertake to set them out, and the Government has reserved all the timber on the Turtle, Duck, and Riding mountains. It is only recently that in Canada the influence of forests upon the rainfall and the volume of the rivers has been recognised, for the Atlantic regions were so heavily timbered that the settler looked upon trees more as obstacles to be got rid of in the quickest possible way than as having value in themselves, and value as gathering and preserving moisture.

Communications

The days have passed away when the voyageurs paddled their canoes along these western streams or

poled the heavier barges on the larger rivers. The days even of the flat-bottomed, stern-wheeled steamer, short though they were, have also gone by, and railways open up the country everywhere to the settler. In western America railways are the pioneers and precede the settlers, clearing the way for them and carrying away their earliest products. It is little more than twenty-five years since this country was acquired by Canada, and there are now 3342 miles of railway in operation within it. Of this 1065 miles is the main line of the Canadian Pacific; from the eastern boundary to the summit of the Rocky Mountains. Winnipeg has become a great railway centre and is the point from whence the Canadian Pacific railway branches out over the west. The Company has built a line almost parallel with its main line, running only 5 to 15 miles from the frontier, striking the Missouri Côteau and skirting it north-westward to the main line at Pasqua, near Moosejaw. Equidistant between this branch and the main line is another parallel branch from Winnipeg to Pipestone. Southward to the frontier from Winnipeg the Canadian Pacific has a line on each side of the Red River, connecting in the United States with the Great Northern railway. In connection with the same system is a line from Regina to Prince Albert on the North Saskatchewan, and another from Calgary north to Edmonton on the same river and south to Macleod, and from Dunmore a branch runs to the coal mines of Lethbridge.

The Alberta Railway and Coal Company has a connection to the south from Lethbridge with the Great Northern of the United States at Great Falls on the Missouri. The Manitoba and North-western is reaching out for a connection with Prince Albert, and is in operation for 223 miles to Yorkton with a branch to Rapid City. The North-west Central has 50 miles of road from

Brandon to Hamiota in the direction of the North Saskatchewan. At Estevan the most southern line of the Canadian Pacific is reached by the "Soo-Pacific" route from St. Paul. The Northern Pacific system of the United States reaches Winnipeg by a branch of its own and continues to Portage la Prairie to connect with the Manitoba and North-western. It has also a branch line from Morris to Brandon.

These are the main railway routes. There are other minor branches, but it will be seen from the extent of these lines that the country is well supplied with means of communication in advance of the needs of the settlers. Prosperous little towns with one or more grain elevators are rising along the railways; and the Canadian Pacific Railway, under the conviction that its own prosperity depends upon that of the whole country, backs up private enterprise. The monopoly under its contract was given up in 1888, and railways may be built in any direction by any other company.

Education

The Dominion Government has provided for schools throughout the North-west by reserving for that purpose certain sections of land in every township as it is surveyed. A Council of Public Instruction has the supervision of this important subject, and schools are opened *pari passu* with the advance of settlement. The religious question is disposed of in the North-west Territories by assigning the time after 3 P.M. for religious instruction by clergymen, and permitting parents to withdraw their children if they desire to do so. Manitoba has a school law of its own, which, at the present time, is the subject of political discussion foreign to these pages.

Law and Order

The transfer of the Indian territories and Rupert's Land, containing large numbers of Indians, threw upon the Government of Canada the responsibility of keeping the Queen's peace over the enormous area between lat. 49° and the uttermost North. The scattered traders of the great fur company had lived and traded in peace, but when the country was opened to settlement, the same internecine struggle would have begun between the red and white races which had caused so much injustice and consequent bloodshed south of the line. To prevent this the North-west Mounted Police was organised—a body of 750 men armed like troopers to act together, and clothed by statute with the power to act individually as constables. The officers were entrusted with full authority as magistrates, and, in that way, law and order were enforced over these immense regions. At the time of the transfer the North-west was being overrun by lawless traders, who, presuming on the waning power of the Hudson's Bay Company, had commenced the corruption and destruction of the Indians by the sale of spirituous liquors. A law was passed forbidding absolutely the importation of alcoholic liquor throughout the territories, and it was rigidly enforced by this most efficient body of men. They were organised under a commissioner, superintendents, and inspectors, so as always to keep in view their civil functions; but they wore the scarlet uniform which the wild Indians had always associated with fair-play and justice. The prestige of the Mounted Police is remarkable. A constable has often ridden into an Indian camp and singled out and arrested and carried off for trial the man he was sent for. Crowfoot, the great chief of the powerful Blackfeet tribe, gave the reason in a few words

"In the United States, when one of our young men does anything wrong and they want to punish him, a troop of soldiers surround the camp and begin shooting into it, killing our women and children. Here in Canada when they want an Indian for doing something wrong, a red-coat comes right off into the camp and we give up the young man he wants; for we know that if he is the wrong man they will let him go again." This is strong testimony for the Mounted Police, and an eloquent plea for his race coming from the mouth of a pagan Indian. There are throughout the north-west eighty-three stations, and the frontier is patrolled by the force, who not only keep order but enforce the revenue and quarantine laws. The Indians are adopting civilised means of subsistence rapidly. The Blackfeet and Blood Indians are increasing their herds of cattle, and are even beginning to buy mowers and hay-rakes. They make contracts with the ranchers to supply hay from their reserves.

It will now be convenient to treat of the separate divisions of the whole area and to state that it is politically organised into two governments:

1. The province of Manitoba, a fully organised province of the Dominion, and
2. The North-west Territories under a government more dependent upon the Dominion Government and not yet arrived at the complete political status of a province.

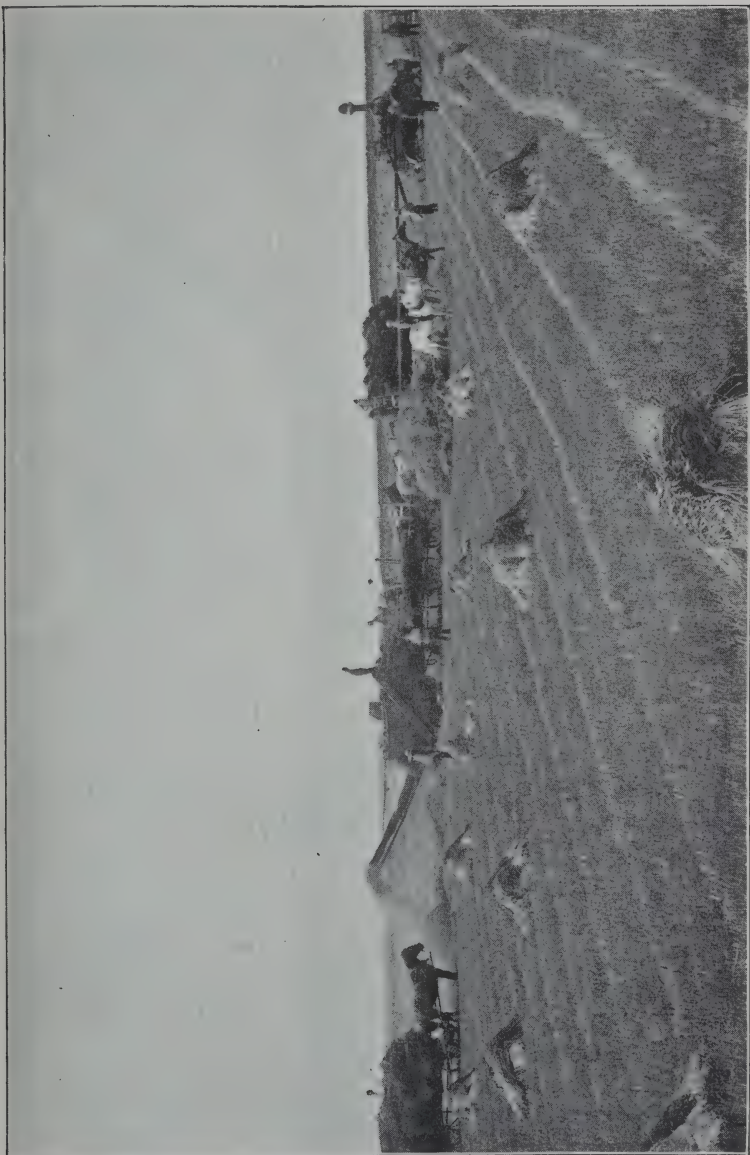
Manitoba

Manitoba is a province of the Dominion organised in the manner of the other provinces, with a lieutenant-governor, appointed by the Federal Government, and a legislative assembly, elected by the people. There is no second chamber, and the executive power is in a

council of five ministers responsible to, and having the confidence of, the legislature. The assembly consists of forty-one members elected by residents domiciled for six months and over. Indians are excepted if in receipt of annuity or treaty money, and all officials of the Dominion Government receiving salaries of more than \$350. If their salaries are less they are presumed to be qualified to vote at provincial elections. The province is represented in the Dominion Parliament by seven members of the House of Commons and three senators. The population by the census of 1891 was 152,506, an increase of 145 per cent in the preceding decade. There were 16,178 more males than females, for the immigrants being mostly young men had no wives to bring with them. It also appears by the census that 77 per cent of the population is rural, and doubtless life on a farm is not attractive to women. Since then a five years' census of population has been taken, and some of the figures have now (1896) been published, showing that total population has increased to 195,425.

The province is almost an exact square of 270 miles on each side and has its base on the international boundary of lat. 49°. The other boundaries are lines of surveys. The northern boundary is 12 miles short of the parallel of 53°; the eastern boundary is a prolongation of the western boundary of Ontario, and is nearly a meridian line touching the north-west angle of Lake of the Woods and the junction of the Winnipeg and English rivers, about long. 95° 10'. The western boundary is likewise nearly a meridian line at about long. 101° 40'. They are lines of surveys, not astronomical lines. The total area is about 73,900 square miles.

The physical features of the province have already been described. The whole of the first prairie steppe is



THRESHING FROM STOOK, GRETNA, MANITOBA.

included within its boundaries, and is flanked by a strip of Laurentian country on the east, and on the west by a portion of the second prairie steppe.

The resources of Manitoba are agricultural, and their magnitude is best shown by the results in tabular form of the two last years. The year 1895 was a very good year, and the year 1896 was very much below the average. The two sets of figures will show the extremes within which the product varies.

TABLE SHOWING THE PRODUCT OF THE CHIEF CROPS IN MANITOBA
IN 1895 AND 1896

		1895.		
		Acreage.	Yield per Acre. Bushels.	Products. Bushels.
Wheat	. . . . .	1,140,276	27·86	31,775,038
Oats	. . . . .	482,658	46·73	22,555,733
Barley	. . . . .	153,839	36·69	5,645,036
Flax	. . . . .	...	...	1,282,354
Rye	. . . . .	...	...	81,082
Pease	. . . . .	...	...	28,229
Total grain crop in bushels				<u>61,367,472</u>
		1896.		
Wheat	. . . . .	999,598	14·33	14,371,806
Oats	. . . . .	442,445	28·25	12,502,318
Barley	. . . . .	127,885	24·8	3,171,747
Flax	. . . . .	...	...	259,143
Rye	. . . . .	...	...	52,255
Pease	. . . . .	...	...	23,383
Total grain crop in bushels				<u>30,380,652</u>

In the year 1896 the export of cattle was 13,833 head, and of hogs 3834 head.

It may serve as an indication of the productiveness of Manitoba to add that a colony of Mennonites from southern Russia settled in 1874 in the south of the province. As



REAPING IN MANITOBA.

Notman, Photo.

a start the colony borrowed \$96,400 from the Canadian Government, and in 1892 it had repaid the principal and interest—in all \$130,386—and the colonists are now owners of a large tract of valuable farm land well stocked with cattle.

The chief cities of Manitoba are Winnipeg, the capital—population in 1881, 7985; in 1891, 25,642; in



FARM ON THE LITTLE SASKATCHEWAN.

1896, 31,649; Brandon, population 3778; in 1896, 4591; and Portage la Prairie, population 3363; in 1896, 3865. The two latter did not appear in the census of 1881.

Winnipeg is situated at the confluence of the Assiniboine with the Red river. In 1870 it was known as Fort Garry, a trading post of the Hudson's Bay Company. It is now a well-built city, comparing favourably in all the conveniences of life with the older cities of America.

It has electric roads and is lighted by electricity. The legislative buildings are large and handsome. The Manitoba University has two affiliated colleges. There is a large city hospital, and there are numerous churches, extensive stores, and large railway stations, where twenty-five years ago was an open prairie and a trading post for Indians and half-breeds.

The North-west Territories

The four territories of the North-west are under one lieutenant-governor, appointed by the Dominion Government, and a legislative assembly elected by the people consisting of 29 members and meeting at Regina. The territories also send to Ottawa, as their representatives in the Dominion Parliament, 4 members of the Commons and two senators. The lieutenant-governor is assisted by an executive council of four members appointed by the Assembly. The Dominion Government provides for the greater part of the expenses of local government, but the legislature has power to make laws for local purposes. The territories do not form a province, and responsible government has not been yet introduced.

There are four territories—Assiniboia, Saskatchewan, Alberta, and Athabasca. The last, Athabasca, lies wholly within the basin of the Mackenzie river, and will be treated more conveniently in that connection.

Assiniboia

This district is composed in almost equal portions of parts of the second and third prairie steppes, and for that reason may naturally be divided into east and west. The district or territory contains an area of 89,535 square

miles. It is bounded on the south by the frontier of lat. 49° , and on the north by a survey line almost exactly on the parallel of 52° , on the east by Manitoba, and on the west by a survey line nearly coinciding with long. $111^{\circ} 40' W$.

Eastern Assiniboia, on the second prairie steppe, is a rich farming country of rolling prairie land. In the



Notman, Photo.

MEDICINE HAT, CROSSING THE SOUTH SASKATCHEWAN.

north there are many patches of wooded land, but the main portion is true prairie. Western Assiniboia is drier and is more adapted for pasture. It is a ranching country, and, while there is water for cattle, the climate is too dry for certain crops. West of Moosejaw station the need for irrigation begins to appear. The country is covered with buffalo grass, a rich short grass, the food of countless thousands of buffalo in former years. This is self-cured by the dry climate, and affords food for the cattle of the ranches. The Souris coal-fields at the south supply abundant fuel. The snowfall is light, and

the climate is affected favourably by the Chinook winds which are felt as far east as Regina. The alkali region crosses the frontier and projects into the southern part of the district.

Alberta

This district is the westernmost of the territories, and is bounded on the west by the Rocky Mountains, and on the east by the territories of Assiniboia and Saskatchewan. It includes the remaining portion of the third prairie steppe. From the United States frontier it extends northward to a survey line almost coincident with the parallel of 55°. The whole territory is underlaid by coal-measures yielding coal varying in quality from lignite to anthracite. Near Edmonton, coal crops out on the bank of the North Saskatchewan, and was used by the Hudson's Bay people before settlers arrived. Now it is regularly mined and sold at Edmonton from \$1.75 to \$2 a ton. The area of the territory is about 100,000 square miles. Winter is shorter than in the more eastern districts, and the Chinook winds exert their fullest influence in the southern half, but strongly influence also the northern half of the district.

The climate and soil of northern Alberta are suitable for every kind of grain or root crops. It is also well watered and has abundance of wood. The north-west corner is true forest land, and the trees follow the numerous streams of the head waters of the Athabasca and North Saskatchewan. There are numerous lakes, and the country is diversified with hills and timbered bluffs, relieving the monotony of the prairie and giving it a park-like appearance.

Edmonton is the chief town of northern Alberta. It is the terminus of the Calgary railway and the carrying-



FARM NEAR EDMONTON, ALBERTA.

place for goods going into the Mackenzie river basin. A few years ago it was a mere Hudson's Bay trading post; it is now a stirring little town with churches, newspapers, electric light, and tramways. A little above the town the river is worked for gold, and \$75,000 have been taken out in one year.

Southern Alberta is the ideal ranching country. It was the favourite winter home of the buffalo, and is now



CALGARY, ALBERTA.

the region of the great ranches. The rainfall is not sufficient for regular crops, and there is no wooded land until the mountains are reached. It is an open, treeless prairie covered with wild grasses, and in winter the light snowfall is licked up by the Chinook winds. The coal of Lethbridge is of good quality and in 5 and 6 feet seams only 40 feet below the surface, and in the foothills and up the mountain passes there is abundance of bituminous coal and areas of anthracite as well. The mines at Canmore are 4230 feet above the sea, and ten miles farther up the pass are the mines of Anthracite station.

Calgary is the chief town—a bright, busy, and prosperous place, non-existent in 1881, but rated in the census of 1891 as having a population of 3876, rapidly increasing. Here the Rocky Mountains are visible on the western horizon, and in this far-western town are found all the conveniences of civilisation. The ranches draw their supplies from Calgary, and almost everything can be found in the stores. A light gray sandstone, found near, is extensively used for building, and the town has a substantial look very surprising in a far-western town scarcely twenty years old. Fort Macleod, farther south, is an important station of the Mounted Police and a large ranching centre.



CATTLE RANCHING—A ROUND-UP NEAR FORT MACLEOD.

In southern Alberta, beyond the "Gap" or gateway by which the Bow river issues from the mountains, and high up in the heart of the mountains, is one of the most attractive spots on the continent. At Banff station is the Rocky Mountain Park, 20 miles long by 10 miles wide, containing within it probably more grand and beautiful scenery than any other area of the same size in the world.



RUNDLE MOUNTAIN FROM VERMILION LAKE, BANFF, ALBERTA.

The railway company have built a hotel here, and the Canadian Government have laid the park out with roads and bridle-paths. Two mountain rivers, bright from their homes near by in the glaciers, rush through it in rapids and falls, and sometimes pause in still reaches. Beautiful mountain lakes reflect in their quiet depths gigantic ice-covered peaks, 8000 to 10,000 feet high. Roads wind through forests of evergreens to scenes of the rarest beauty.

For the angler the lakes are full of trout. Lake Minnewanka is nine miles long, lying 4500 feet up between two ranges of lofty peaks. Medicinal springs occur on the slopes of Sulphur Mountain—hot springs containing soda and magnesia salts—and for the use of tourists the



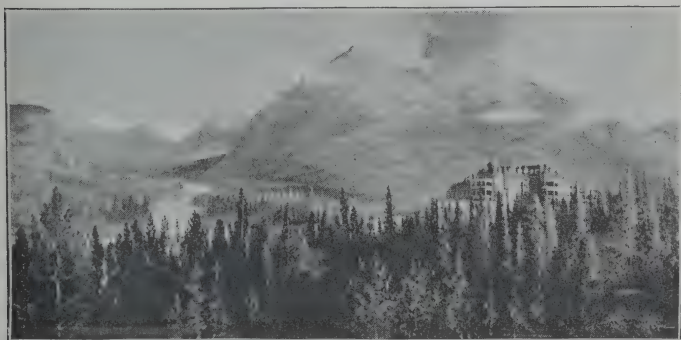
Notman, Photo.

LOUISE LAKE, ROCKY MOUNTAINS, ALBERTA.

Government has provided houses and attendants. The park contains a sanitarium and a hospital, and in summer is a very favourite resort for travellers from all lands. For those who do not seek quiet and rest it is a convenient centre of excursions into the mountains for mountain goats, mountain sheep, or if perchance it should be considered desirable, for an occasional grizzly bear.

Saskatchewan

This is a district of 107,092 square miles, north of Assiniboia, and bounded on the west by Alberta, and on the east partly by Manitoba, but chiefly by the northern part of Lake Winnipeg and the waters of the Nelson



Notman, Photo.

CANADIAN PACIFIC HOTEL AT BANFF, ALBERTA, AND BOW RIVER VALLEY.

river. On the north it is bounded very nearly by the parallel of 55° .

The first intention of the Government was to carry the railway through this district, but the company preferred the more southern route. It is the best watered region of the North-west, with abundant streams and lakes, the resort of myriads of wild fowl in their migrations. The forest land extends along the northern margin at no great distance from the North Saskatchewan, and the trees reach down among the prairies and give the country a park-like appearance. The district forms the chief part of the "fertile belt" of Captain Palliser, and every kind of crop is grown in its productive soil. The farming country

round Prince Albert is especially rich, but there are extensive areas at Battle river and Carrot river and in many other places quite as good.

The chief settlements are at Prince Albert and Battleford. The district has not attracted the attention of settlers because it has not been accessible by railways to the same extent as the more southern districts. The river from Fort Pitt to 50 miles west of Edmonton is worked in places for gold. In the summer of 1896 the banks at Edmonton purchased \$45,000 of gold. The purchases of furs at Edmonton the same year amounted to \$271,000.

History

In 1728 Pierre Gaultier de Varennes de la Verendrye, while in charge of a fur-trading post on the northern shore of Lake Nepigon, was told by an Indian of a great lake at the west discharging westwards by a large river into a sea which ebbed and flowed. Never had the French given up the idea of a water-route to the Pacific. It was constantly in their minds, and at that very time they were seeking it through the country of the Sioux. La Verendrye was no ordinary man. Born at Three Rivers, he passed over into France in his early manhood, and, entering the army, was severely wounded at Malplaquet. He returned to Canada and joined the number of those hardy and fearless men who found congenial homes in the pathless forests and far-reaching rivers of Canada, who endured toil and privation with light hearts and tireless bodies, and for whom the wildest tribes in the west had no terrors. The idea seized him that the river of the western ocean was more to the north than had been supposed. He came east and succeeded in interesting

the governor, Beauharnois, and obtained an exclusive license for the fur trade in the territory to be explored. Being poor, he obtained means by associating others in his enterprise, and in 1731 he started from Montreal for the Grand Portage, on Lake Superior, with a large party. Some vague knowledge already existed of the lake wilderness west of the post on the Kaministiquia, and Lake Winnipeg even appears on the maps of the time as a small lake; but that was the utmost limit of knowledge, and La Verendrye led his party into what was at the time an unknown wilderness. In the succeeding nine years, undeterred by the loss of one of his sons and twenty of his companions, he succeeded in building a number of trading posts—Fort St. Pierre, at the outlet of Rainy Lake, Fort St. Charles, on the west shore of Lake of the Woods, Fort Maurepas, at the mouth of the Winnipeg river, Fort Rouge, on the site of Portage la Prairie (the portage to Lake Manitoba), Fort Bourbon, on Cedar Lake, the inlet of the Saskatchewan, and Fort Dauphin, on Mossy river where Lake Dauphin discharges into Lake Manitoba. Other lesser posts there were, but these were the strategic points of the whole of Manitoba, and in 1740, before the English had crossed the Alleghany Mountains, or the Hudson's Bay traders began to ascend the rivers from the bay, our prairie province was the field of a valuable fur business centering at Montreal.

The Souris river was an important stream in those days, for it led to the portage for the upper Missouri, and the French built a fort at its junction with the Assiniboine. La Verendrye pushed up the Souris, ever in search of the great river of the west. He struck across to the Missouri, and came upon the Mandan tribe—an interesting tribe of Indians, whose faces are perpetuated in George Catlin's pictures, and who in after years were

supposed by Celtic enthusiasts to speak Welsh and to be descendants from Prince Madoc's party of emigrants in the twelfth century. They were very kind to La Verendrye. He, however, went no farther, and one of his sons, whom he left behind, also failed to proceed farther. In 1742 two of his sons, with only two companions, started over the same ground, and pushed their adventurous way across the broken and arid region of Montana until they saw the lofty snow-capped peaks of the Big Horn range of the Rocky Mountains. Canadians from Three Rivers were the first white men to see the Rocky Mountains at the north—but the great river of the western ocean was yet hidden.

La Verendrye, the father, died in 1749, and his two sons continued the trade and discovery of the North-west; but the evil days of New France were approaching, La Jonquière was governor, and Bigot, the evil genius of Canada, had arrived. The license of the brothers was cancelled, and their forts and property and business became the prey of a syndicate of the clique of the favourites of the new governor and intendant. Acting for them, Legardeur de Saint Pierre took up the places and enterprises of the Verendrye brothers. He sent an expedition of ten men three hundred leagues up the Saskatchewan (probably the south branch), and they built, in 1751, Fort la Jonquière, at the foot of the Rocky Mountains. It was soon abandoned, but again the Rocky Mountains were seen by French Canadian voyageurs before Daniel Boone had crossed the mountains into Kentucky, and before the Hudson's Bay traders had established a post beyond tide-water. The seven years' war ensued, and the two brothers La Verendrye, though ruined in fortune, served their king in defence of their country. One of them died in 1755, and the other perished by shipwreck in the

Auguste on the coast of Cape Breton, with a number of distinguished Canadians who were returning to France. Thus closed in injustice, disappointment, and disaster the first chapter of North-western history.

The fur trade of the French was broken up by the war, and the consequent uncertainty and confusion of the cession; and, before the country could again become quiet, Pontiac's war broke out, and the whole west was aflame with fire and massacre. Peace was made in the fall of 1765, and in 1766 two Montrealers are reported as trading on the Saskatchewan. Others followed, both English and French, until the Hudson's Bay Company began to wake up, and in 1774 built Fort Cumberland on the same river commanding the route to the Athabasca. In 1787 the chief Montreal merchants combined and formed the North-west Company, managed by such men as Frobisher, M'Tavish, M'Gillivray, Gregory, and M'Leod, and they availed themselves of the skill and knowledge of the French voyageurs and traders. They pushed their posts into the farthest regions of the North-west, and one of their partners, Alexander Mackenzie, went down the river which bears his name to its mouth, and, the following year, was the first white man to cross the Rocky Mountains and reach the Pacific on the north. Sir Alexander Mackenzie and the Honourable Edward Ellice formed in 1796 the X. Y. Company, but united again in 1804 with the North-west Company. Farther and farther these daring men extended their operations. They had posts at Pembina, in the present Minnesota, and as far south as Grand Forks, in Dakota. On the north their posts extended down the Mackenzie river, and on the west they crossed the Rocky Mountains and followed the Columbia river almost to its mouth. Then the Hudson's Bay Company, fully aroused to the danger of

having the Indians coming to their posts to trade intercepted on the way, began to occupy the country; and, in the rivalry which followed, the Indians were being fast corrupted by the competition of the rival companies for their furs. The Hudson's Bay Company's business was done by way of York Fort on Hudson's Bay, and the North-west Company's by way of Montreal and the Grand Portage at the head of Lake Superior.

While the rivalry between the two companies was fast approaching a crisis, the Earl of Selkirk arrived in Canada. He was a very capable and thoughtful nobleman, with advanced views on colonisation. At Montreal he was in the centre of the fur trade, and there he acquired such a knowledge of the far west that he resolved to found a settlement in the very heart of the continent. Returning to England, he purchased a controlling interest in the stock of the Hudson's Bay Company, and, despite the protests of the more practical shareholders, he purchased from the company an immense tract of territory which he called Assiniboia, and proceeded to send out settlers. The tract acquired reached from about Big Island, on Lake Winnipeg, far south, into the present Minnesota and Dakota, to the water-parting of the basin of the Red River. On the west the line reached the confluence of the Qu'Appelle and Assiniboine, and on the east it reached Lake of the Woods, with a long projection along the water-route to the height of land over Lake Superior. The area of this mid-continental empire was 116,000 miles, and it comprised what are now known to be the choicest farming lands in the world—the very garden of the North-west. In 1812-13 he sent out the first party of settlers by way of Hudson's Bay, under Captain Miles Macdonald as Governor of the Hudson's Bay Company and of the

Selkirk colony. He proceeded to enforce what he conceived to be the territorial rights of the company against the North-west Company's employees. It is unnecessary to discuss the merits of the controversy. It culminated in a private war which lasted several years, in the course of which the colonists were driven away and posts on both sides were captured and destroyed. At last, in a



OLD FORT GARRY.

Type of an important Hudson's Bay Company's post. It stood on the site of Winnipeg, Manitoba.

battle between the Hudson's Bay Company's people and the North-westers, Governor Semple, a military officer then in command of the colony, was killed, together with some twenty of his people, and the colony a second time scattered. In 1817 Lord Selkirk succeeded in establishing a final colony on the Red River, and the whole matter went before the courts, and became the subject of a war of pamphlets. Meantime there was private war at all the forts and carrying-places throughout the great western territories.

At last, in 1821, both companies were nearly bankrupt. The long struggle had exhausted the

resources of both; for, however congenial a life of turmoil may have been to the half-breeds and the traders on the wild western plains, the men who, at Montreal and London, managed the finances of the companies, saw the folly of the struggle, and both companies united under the charter of the Hudson's Bay Company. The policy changed; the North-west became a sealed book, and the little settlement on Red River seemed to lose reality even to the Canadians themselves. Gradually the company withdrew its operations from Montreal, and conducted its business, unobserved, by the remote route of Hudson's Bay. In the year 1846 a detachment of the 6th Royals, under Lieut.-Col. Crofton, was sent to the Red River, but they went by Hudson's Bay. They returned in 1848, and for a few years a small force of pensioners was maintained at Fort Garry, but they went and returned by way of Hudson's Bay. All knowledge of the fertile region of Assiniboia faded away and a veil was drawn over the land—a veil of misrepresentation—and the country now covered with teeming corn-fields was thought of only as a region of illimitable snow and intolerable frost. So closed the second chapter of North-west history in the domination of a handful of fur-traders over an empire—a domination which must be admitted to have been beneficial, for the time of the Dominion of Canada had not yet come.

This territory covered by the Hudson's Bay Company's operations was considered under two heads. First, Rupert's Land, granted under the charter to Prince Rupert and his associates; and second, the Indian territories, occupied with exclusive right of trade under licenses from the Crown for periods of 21 years. In the year 1858 the Canadian Government, in an address to the Queen, impugned the validity of the charter, and deprecated a renewal of the

license. Seven years were spent in correspondence and negotiation between the Imperial Government, the Hudson's Bay Company, and the Canadian Government, and in the British North America Act provision was made for admitting these territories into the Dominion. It was recognised by the Canadian people generally that they were necessary to the continuous existence of the confederation of the provinces then in course of formation, and, after much further negotiation, the Company in 1869 surrendered to the Crown, for the consideration of certain territorial reserves, and the sum of £300,000 sterling, to be paid by Canada, the whole of their right and title to the territories in question for transfer to Canada.

While the final steps for transfer were in progress, the Canadian Government appointed a governor and sent parties of surveyors to survey lands. No opposition was anticipated; but in this all parties were mistaken, for the Canadian officials were met at the frontier by an armed party of half-breed residents and warned not to proceed farther.

These transactions are so recent that it is inconvenient to discuss the merits of the dispute, or to enter upon the details of the events. An organisation had been formed among the half-breeds with the intention of exacting terms of some kind from the Canadian Government before yielding peaceable surrender of the territory. The movement developed into an insurrection, and an armed force under the command of Louis Riel seized Fort Garry, issued proclamations as a provisional government, summoned a convention, and passed what they called a Bill of Rights. Then followed the imprisonment of settlers adverse to the provisional government, the hoisting of a new flag—a white flag with a fleur de lys and shamrock;

the confirmation of Louis Riel as president, and, last of all, the crime of condemning Thomas Scott to death for rebellion against the provisional government, and of shooting him in cold blood.

In these and similar proceedings passed the winter of 1869-70, but, as the spring opened and the country became again accessible from Canada, calmer counsels began to prevail and wiser heads began to resume influence. The Imperial Government had accepted the transfer from the Hudson's Bay Company and felt bound to hand it over to Canada. The Imperial troops had not at that time been withdrawn, and an expeditionary force was despatched under Colonel Wolseley, now Field-Marshal Lord Wolseley, consisting of 250 men of the Imperial army and 750 men of the militia of Canada. No resistance was offered, the men concerned in the rebellion had disappeared, civil government was established, the two battalions of Canadian troops remained over the winter, but the Imperial troops returned at once. Thus the transfer was complete, and all the North-west to the Rocky Mountains and the Polar Ocean became part of the Dominion of Canada.

On 5th July, 1871, British Columbia entered the union, and the chief condition was that Canada should build a railway to connect the new province with the railway system of Canada. This was a stupendous task for three millions and a half of people; but the national spirit of Canadians was aroused and they were determined to carry it through. Surveys were instituted to discover the best route, and more especially to discover a practicable pass over the Rocky Mountains. This would necessarily take some time, and in the meanwhile the Government adopted the policy of having the Pacific Railway built by a company and not by the Dominion. In 1873 the first Pacific

charter was granted; but before anything was done the Government was defeated at the polls, consequently the charter fell through, and the new Government decided to construct the railway as a public work. The surveys were pressed forward, and after a long and careful examination the line of road was located by way of Edmonton and the Yellow-head Pass to Burrard Inlet. In 1878 the Government again changed hands, and the original policy was reverted to—the present company obtained the charter in October, 1880, the existing location was adopted, and the 1st of May, 1891, was fixed as the limit of time for completion of the whole line. The history of the railway is as interesting as a romance. There is only space to say that on June 28, 1886, the first train ran through from Montreal to Burrard Inlet—five years before the expiration of the stipulated time. The company was a most exceptional combination of skill, energy, and courage, and the more that is known of the difficulties of the undertaking the more wonderful does the result appear to be.

The troubles of Manitoba were over—those of the North-west were to come. Louis Riel had been banished and his term was ended. He was residing in Montana, and had been naturalised in the United States, when, in June, 1884, the half-breeds on the Saskatchewan, who had some grievances, invited him to come over and put their demands into a form to be pressed upon the Dominion Government. Agitation continued all winter, and in March, 1885, the rebellion of 1869 was repeated. A provisional government was again formed, with Riel again as president. This rebellion was more dangerous than the former; for now some of the Indians took part with the half-breeds and broke out from their reserves. The rebels soon came into conflict with the authorities,

and in the first engagement near Duck Lake, on 26th March, the loyalists retreated to Prince Albert with a loss of twelve men killed. This slight success inflamed the Indians, but it also aroused the whole Dominion, and before four days were over the volunteer militia were on the move westwards; and indeed the emergency was serious, for some 2000 Crees and Stony Indians broke out from their reserves and commenced to plunder the settlers and to threaten the town of Battleford. They massacred the settlers of Frog Lake, including the Indian agent and the Roman Catholic priest in charge of the mission. The way was long and difficult, for the railway was not complete along the north of Lake Superior, but in less than a month a strong body of troops was upon the scene of action under General Middleton. The first engagement took place at Fish Creek. Gabriel Dumont, who commanded for Riel, with the title of adjutant-general, had a natural gift for war, sharpened by the wild life of the plains, and had disposed his men very skilfully in rifle-pits. They were accustomed from childhood to the use of the rifle, and as they fired from shelter there were many casualties among the troops. Both of the aides-de-camp of the general were wounded, and he himself had a narrow escape, for a bullet passed through his cap as he was leading his men. The rebels evacuated the position during the night. They had lost fewer men than the attacking force.

The whole North-west was by this time in a turmoil. The powerful tribes of the Blackfeet were with difficulty kept quiet by the influence of Father Lacombe and his fast friend the war-chief Crowfoot. Some of the smaller posts had been abandoned, and small detachments of Mounted Police assisted by the settlers were holding Battleford, Prince Albert, Edmonton, and Fort Saskatchewan. A detachment under Colonel Otter had an en-

gagement with a large body of Indians, under cover, at Cut Knife Hill, and had to retire to Battleford. The Indians knew how to avail themselves of every inch of cover, and the plunder of the agents' stores had given them abundance of ammunition. The rebellion was, however, crushed at the place of its origin in the parish of St. Laurent. There, at Batoche Crossing on the South Saskatchewan, Riel entrenched himself in a good position in ravines protected also by rifle-pits, planned with great judgment by Dumont, and before this position General Middleton was detained four days, for he was very careful in exposing his men. The rebels were well covered and were skilled marksmen well commanded, for the wild life of the plains is a good school for a soldier. On the other hand, the volunteers were on their first service and were impatient at the delay, and at seeing their comrades fall by the bullets of unseen enemies. At last they were let go and they carried the position with a rush. The rebellion then collapsed—the half-breeds surrendered, and Big Bear and Poundmaker with their Indians gave up their arms. The half-breeds had made a good fight. All the Indians on the plains who had not actually revolted were in a state of excitement, and the Canadian troops had to patrol the frontier of the United States as well as to watch the Indians over the whole territory while attacking the rebellion at its centre. The first blow was struck on 26th March, and on the 12th of May the rebellion was crushed. In this short time the Canadian militia, who had never seen active service before, had got to the scene of action distant 1800 to 2500 miles from their homes, and had done a great deal of marching and some sharp fighting. There were 38 killed and 115 wounded in action, besides the losses by the fatigues and hardships incident in such a campaign. Gabriel Dumont, who was

the life of the fighting, escaped to the United States. Riel surrendered, and, after trial, was hanged for treason; eight Indians who were convicted for murdering settlers were also executed. The memory of the murder of Thomas Scott in the first rebellion set public opinion strongly against any further clemency to Riel.

These events close the history of the North-west. The country is settling fast, the Indians are beginning to take up civilised modes of life, and the grievances of the half-breeds are redressed, so that the North-west has entered into that happy condition when it makes no more history. The great real estate boom followed, when fortunes were made and lost in a day. Of this the only remaining sign is the belt of unoccupied farm land round Winnipeg still held to be sold at some future time for choice city lots.

NOTE TO CHAPTER XIV

The following publications contain further detailed information upon the subject of this chapter :—

Annual Reports of the Board of Trade of Winnipeg.

DAWSON, G. M.

Report on the Geology and Resources of the region in the vicinity of the forty-ninth parallel, from the Lake of the Woods to the Rocky Mountains. Montreal, Dawson Brothers, 1875.

GUNN, HON. DONALD.

History of Manitoba from the earliest settlement, edited by C. R. Tuttle. Ottawa: Maclean, Rogers and Co., 1880.

MACOUN, Prof. JOHN.

Manitoba and the Great North-west. Guelph, 1882.

MANITOBA GOVERNMENT.

Bulletins of the Department of Agriculture.

MASSON, HON. L. R.

Los Bourgeois de la Compagnie du Nord-Ouest. 2 vols., 8vo. Quebec, 1889.

The following are the Reports of the Geological and Natural History

Survey referring to Manitoba and the North-west Territories excepting Athabasca.

MANITOBA.

A. R. C. Selwyn, 1873-76, 1880. R. Bell, 1873-75, 1878. J. W. Spencer, 1875. G. M. Dawson, 1880. J. B. Tyrrell, 1888, 1891. Warran Upham, 1889.

NORTH-WEST TERRITORIES.

Assiniboine District.

R. Bell, 1884. R. G. McConnell, 1885. G. M. Dawson, 1880. J. B. Tyrrell, 1891.

SASKATCHEWAN DISTRICT.

Dr. Selwyn, 1874. A. S. Cochrane, 1880. J. B. Tyrrell, 1891-93.

ALBERTA DISTRICT.

(Southern), G. M. Dawson, 1882-84. (Northern), J. B. Tyrrell 1886.

CHAPTER XV

BRITISH COLUMBIA

EVEN now, when populous cities stud the shores of the Pacific Ocean, when great steamships start daily from crowded wharfs for far-off lands from which the mists of fable have only recently cleared away—even now, when western science and western activity have invaded those dreamy regions where the west changes into the east, it is difficult to divest the mind of the romantic interest associated with the great South Sea of the early sailors. The more one has read of their voyages and the more familiar one is with Hakluyt—that prose Homer of the English race—the more wonderful become the achievements of the past fifty years. Not one hundred years had elapsed after Alexander Mackenzie—partner in a Montreal fur-trading company—broke through the western mountains and pressed on his perilous journey until he saw the tide rising at the mouth of the Bella Coola, when a train of cars left from alongside the ocean shipping of the same port to pursue an unbroken journey to the *Mar del Sur* of the good Sir Humphrey Gilbert's prolix discourse. What may be in store for our country in the hidden counsels of Providence no man can know, but the destinies of the people who dreamed such a dream must be high destinies, and the memory of the men who realised it for



them will not soon perish; for they accomplished the will of the Canadian people who stood behind them all the while, and supported them throughout their daring enterprise.

Boundaries

British Columbia—the Pacific province of the Canadian Dominion—is bounded on the north by the parallel of 60° , and on the south by the parallel of 49° , as far as the Strait of Georgia, or Gulf of Georgia, as it is locally called. The whole of Vancouver Island is included in it, and south of the island the province is bounded by the Strait of Juan de Fuca. The line passes through the centre of the nearest to Vancouver Island of three navigable channels. On the east the province is bounded by the summits of the Rocky Mountain chain, from 49° to about 54° north, thence the boundary line separating it from the North-west Territories follows up the meridian of 120° west longitude to the northern boundary. On the west it is bounded by the Pacific Ocean as far as Cape Chacon on the north side of Dixon Channel; from thence the western boundary is a narrow strip of the Alaskan coast now in process of delimitation.

The area of the province is 383,000 square miles. It is the largest of all the provinces of the Dominion, and it is the most sparsely populated. The total population in 1891 was 98,173, consisting of whites 54,061, Indians 35,202, Chinese 8910, or 0.3 persons to a square mile—a population about that of Huddersfield, to an area nearly equal to that of France and Spain. The population is practically all in the most southern part, and on Vancouver Island.

The province has very strongly marked characteristics, and differs greatly from all the other provinces of Canada.

Their physical peculiarities must be explained by their hydrography; but orography is the key to the geography of British Columbia. The physical geography of the province is exceedingly complex and difficult to understand. The rivers are abrupt in their turns, swift and turbulent, and navigable only in short stretches—the lakes are narrow and deep, with precipitous mountain shores; and, in fact, they are more like the troughs of mountain ranges than the broad expanses of the lakes of central Canada. There is fertile agricultural land in abundance, but it is scattered over the province, and not collected in broad areas of arable plains. There are several distinct climates—the genial climate of Devon, the humid climate of the west of Scotland, and the extreme continental climate of central Canada.

The conditions which, in the opening chapter of this book, were seen operating to soften the climate of Europe at the expense of that of America are here reversed. The eastern or Atlantic outline of America is almost reproduced in the eastern or Pacific outline of Asia, and the great westward equatorial current of the Pacific impinges upon the counterpart of the Gulf of Mexico in the overlapping peninsulas and islands of the eastern archipelago, and its waters flow in a return current similar to the Gulf Stream of the Atlantic. The China Sea, the Banda Sea, and the Celebes Sea are so many caldrons from whence the heated water overflows to the north-east along the coast of Japan. For ages this current has been known to the Japanese as the “Kuro Sivo” or the black river, from its dark blue colour contrasted, as in the Atlantic, with the lighter green of the adjoining sea. Controlled by the same general laws, it turns to the eastward towards the north-west coast of America, and, as in the Atlantic, throws up a branch to the Arctic Ocean;

but the parallel ends there, for Behring Strait is very shallow, having an average depth of only 25 or 30 fathoms. There is no wide and deep opening to the Arctic waters, and although there is a northward current through Behring Strait, which prevents the southward passage of icebergs, it is not like the great current which reaches the Spitzbergen Sea. The mass of the Japan current is thrown upon the coast of North-west America, whence it turns to the south and rejoins the great equatorial circuit. From this it results that the climate of Sitka and the Aleutian Isles is mild and intolerably rainy though near the latitude of 60° —the latitude of Hudson's Strait—while in the gardens of Victoria, Vancouver Island, flowers may bloom all the year round.

The province extends from 49° to 60° latitude, or 761 miles on the mainland, and the northern and southern boundaries are straight lines. As far as a line almost upon latitude 54° , or for 346 miles, the eastern and western boundaries are the summits of the Rocky Mountains and the Pacific coast respectively, and these are approximately parallel lines running south-east and north-west. On the parallel of 54° the width of the mainland is from longitude 120° to $130^{\circ} 30''$ or 427 miles. The southern portion is therefore approximately a rhomboid. The portion north of 54° is bounded on the east by a perpendicular line—the meridian of 120° —and is thus included within three straight lines containing two right angles. The western boundary, on the side of Alaska, is irregular; but this northern portion may be considered as a square 414 miles from north to south, with an average width of 550 miles.

Although such attempts to compel the physical features of a country within mathematical lines are rough, they

are an assistance in unravelling a tangled geography ; and, in this instance, the belt of division between 54° and 55° really corresponds to a marked natural division. Moreover, the northern portion is practically uninhabited, unsurveyed, and, to a great extent, unexplored ; and then there is a line of water-parting a little north of 54° dividing the basins of the Skeena and Peace rivers from the basin of the Fraser. Summit Lake at the Giscome portage from the Fraser to the Parsnip is in latitude $54^{\circ} 15'$, the divide of the Babine is at $54^{\circ} 20'$, and Cape Chacon, the southern point of Alaska, is at $54^{\circ} 40'$; the narrow projections of the sub-valley of the Stuart river may be disregarded. Cross ranges of mountains between 54° and $55^{\circ} 30'$ also contribute to shut off this northern part from the southern half of the province.

Mountain Ranges

Two great physical features dominate the geography of British Columbia—the Rocky Mountains and the Coast Mountains. Other mountains in more than abundance there are, but these are continuous and persistent through the whole extent of the province, and form the eastern and western rim of the “sea of mountains.”

The Rocky Mountains are a continuation of the United States chain of the same name. They enter Canada at longitude 114° W. The boundary line between the province and Alberta follows the summits of the range as far as 54° , the point where it turns away north to follow the meridian of 120° W. The Rockies continue their north-west course within the province. At the valley of the Peace river their elevation is greatly reduced ; but, rising again, they continue along the

western margin of the Mackenzie river valley, until they die gradually away as they approach the shores of the Arctic Ocean.

The Coast range, frequently called the Cascade range, commences just at the southern frontier at longitude 122° W. and continues along the Pacific coast to the head of Lynn Channel close to the northern frontier—a distance of 900 miles. It is this range which gives such a strong character to the sea coast; to it are due the profound and gloomy fiords and the stupendous precipices which render the coast line an exaggerated reproduction of Norway.

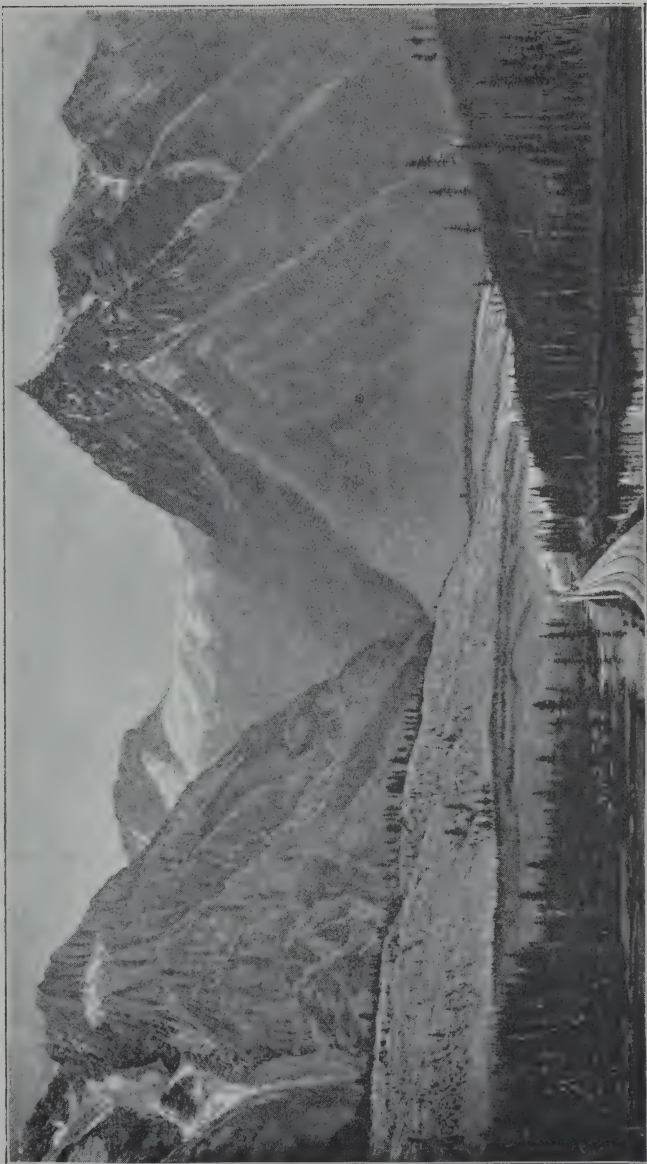
Keeping in mind these two master ranges, it is now to be observed that there are other parallel and some cross ranges, all of which are too often in general speech confused together in the expression "Rocky Mountains." These ranges are, however, different in geological age and composition, and, for that reason, the director of the Geological Survey has preferred the term Cordilleras, or Cordilleran belt, for the general mass of mountain chains, and confines the expression Rocky Mountains to the most eastern range. This nomenclature conduces to clearness, and so it may be said without confusion that the Cordilleran belt is 400 miles across, and the Rocky Mountains are 60 miles across.

It has been shown that the southern half of British Columbia is roughly in the form of a rhomb. At the south-eastern corner of the rhomb three subsidiary mountain ranges of different lengths, and with sharply defined valleys, cross the frontier, with courses more directly to the north, and cut off that corner of the rhomb into a system of its own. This is the valley of the Columbia and its affluent the Kootenay, and these rivers flow through and around these stupendous ranges of mountains

in tranquil marches and counter-marches without a parallel elsewhere in the world for their abrupt changes of direction. In this region of East and West Kootenay are the recent silver and gold discoveries which are attracting so much attention. All the rest of the rhomb of Southern British Columbia is in effect the basin of the Fraser river system. The Coast range has also a subsidiary and parallel mountain chain in the partially submerged range forming the axis of Vancouver and Queen Charlotte Islands.

Before attempting to describe these mountain ranges it should be remarked that the core of the rhomb of Southern British Columbia, inclosed between the Coast range and the ranges to the east, is considered as a plateau, and called "the interior plateau." This region is about 100 miles wide and 500 miles long from north to south. It is only, however, in a special sense that it can be called a plateau; for, viewed from the lower levels, it appears like a hilly or even mountainous country; it is only when seen from a high level that it appears to be a number of isolated plateaus of an average elevation of 3500 feet, so that it is a plateau chiefly by contrast with the lofty bordering mountain ranges. During the Tertiary period it is stated by the geologists to have been a true plateau in the usual acceptation of the term, but the surface has been deeply furrowed by streams, and has been upheaved in places into ridges, so that to an unscientific eye this is not apparent. In this region, however, there are many plains and valleys and benches of rich land, and in the aggregate there is a large area of agricultural and grazing land.

Rising from a region of foot-hills 20 miles wide, formed by the folding of the strata, the Rocky Mountains present to the traveller from the east an abrupt and



OTTER TAIL RANGE, ROCKY MOUNTAINS.

serrated outline against the sky, revealing by its acute summit peaks its recent geologic age. It is the latest formed of all the mountain chains of the province, as shown by the inclusion of comparatively new rocks in its flexures. The mountains themselves are, however, composed chiefly of old rocks, ranging in age from the Cambrian to the Carboniferous. Crystalline rocks are scarcely represented, and whole mountain ridges are often formed of massive limestone strata which no doubt underlie the eastern plains and are here uplifted and upturned on their edges. It is 60 miles wide at the parallel of 49° , and continues in a north-west direction (narrowing to 20 miles at latitude 56°) for 850 miles to the valley of the Peace river, where, as before mentioned, it falls to a lower elevation; rising again in a range at oblique échelon a little more to the east, it continues along the border of the Mackenzie valley.

The average height of the range along the United States boundary is 8000 feet, and it culminates between 50° and 52° where the North Saskatchewan and Athabasca rivers take their rise in the glaciers of the loftiest valleys of the range. Several peaks near the boundary reach 10,000 feet; but the highest peaks are supposed to be Mount Murchison 13,500 feet, Mount Hooker 13,500, Mount Brown 16,000 feet, all near the sources of these rivers.

There are many well-known passes over the Rockies. Commencing from the south, the chief are:—the South Kootenay or Boundary Pass 7100 feet, the North Kootenay Pass 6800 feet, the Crow's Nest Pass 5500 feet (a railway over the pass is projected to open up some extensive coal-fields), Kananaskis Pass 5700 feet, Kicking-horse or Wapta Pass 5300 feet (the Canadian Pacific Railway Pass), the Howse Pass 5210 feet, the

Athabasca Pass 6025 feet, the Yellow-head Pass 3733 feet (the original design of the Canadian Government was to build the railway by this pass), the Smoky River Pass 5300 feet, the Pine River Pass 2850 feet, the Peace River Pass 2000 feet. This last is scarcely a mountain pass, for the Peace river flows through it, and, excepting for a portage of 12 miles, at what is called the Cañon of the Peace, 40 miles east of the Rocky Mountains, it is navigable for 557 miles far up into the heart of the northern part of the province. On the western side of the Rocky Mountains there is a continuous valley, 700 miles long, through which flow the Kootenay in its southward course, and the Columbia in its northward course. The northward flowing portion of the Fraser also follows this valley, and, where it turns suddenly, after the manner common among the rivers of this province, to flow in a diametrically opposite direction, the Parsnip river takes up the valley and occupies it until its junction with the Peace.

The Rocky Mountains are appropriately named. The summits are massive edges of fractured limestone strata bare of soil. The effect of their great height is diminished on the eastern side by the rise of the foot-hills and the height of the passes. It is only on descending into the western valley that their full height is appreciated. The western slopes are the more densely wooded. On the eastern side the slopes are covered with trees where there is soil, and interspersed with grassy prairie areas. The mountains abound in coal; and anthracite of the best quality is mined near a station called "Anthracite" on the Canadian Pacific Railway.

West of the Rockies, distinct in composition and much earlier in geological age, are three ranges of mountains, of almost equal importance to them. These ranges rise

directly from narrow valleys, and there are no foot-hills to detract from their height. They are all three composed mainly of crystalline or highly metamorphosed rocks



MOUNT MACDONALD.

Notman, Photo.

—granites, schists, and gneisses—but, though related geologically in age and composition, they are very distinct geographically, having valleys clearly marked by narrow

lakes or rivers. Commencing from the east they are known as the Purcell, the Selkirk, and the Gold ranges, although they are frequently called by the officers of the Geological Survey by the collective name of the Gold Mountains, because of the identity of their structure, and the fact that they are the chief source of the gold and silver found in the province. They are not known to rise much higher than 10,000 feet, the chief measured peaks being Mount Sir Donald 10,645 feet, Mount Macdonald 9440 feet, and Mount Tupper 9030 feet—all in the central or Selkirk range. It has been previously pointed out that the Rocky Mountains run from south-east to north-west; consequently they make an angle of 45° with the frontier, and bound the south-east corner of the rhomb of the southern half of the province. These three inner ranges run almost north and south, as will appear on a consideration of the rivers and long narrow lakes which mark their valleys, and, if prolonged, they would cut the long inner valley of the Rocky Mountains. They are not prolonged, but interrupted. The Purcell range in the eastern angle is the shortest, and is inclosed in the loop between the head of the Kootenay and Kootenay Lake. The Selkirk range is the next to the west. The Columbia flows round this range. Issuing from the Columbia Lakes it flows north along the eastern base of the Selkirks to a place called the Boat Encampment, where it sweeps round the head of the range in a sudden curve, and flows in a diametrically opposite direction, south between the Selkirk and the next range to the west—the Gold range.

The contour of these inner ranges is more rounded than that of the Rockies, and the upheaval is more confused. There are, indeed, in the Selkirks many abrupt peaks; but the general character of the whole

chain is less serrated, both from the character of the rock masses and the greater age of the system. The width of the Selkirk range is about 80 miles. Below the snow-line, especially on the western side, it is densely forested, and enormous glaciers fill the upper valleys.



Henderson, Photo.

THE HERMIT GLACIER, SELKIRK RANGE.

The scenery in this part of the Cordilleran belt is grand beyond description.

The Gold range is about 60 miles in width. It rises from the valley of the southward-flowing Columbia to a height of 8000 to 9000 feet. Being of a similar composition, much that has been said of the Selkirks applies equally to it. The scenery is not so grand as among the Rockies and the Selkirks, although in any other country

it would be thought so. In British Columbia it suffers by contrast. The Gold range continues much farther to the north, where it is known as the Cariboo Mountains, and as the region of the chief early discoveries of gold in British Columbia. In that region the chain curves and runs parallel to the Rockies, until the Fraser river, repeating the course of the Columbia on a larger scale, sweeps round it and changes its course to a diametrically opposite direction, flowing southwards, inclosing the whole series of inner mountain ranges to the east between it and the boundary of the province.

Interior Region

Descending from the Gold range the interior plateau, previously referred to, intervenes for a distance of 100 miles until the Coast range—the great western rim of the mainland of the province—rises, as before noted, on the ocean margin with a width of 100 miles. This is often, even in public documents, called the Cascade range, but inaccurately from a scientific standpoint, for the Geological Survey staff has shown that the Cascade range of the United States is essentially different, both in composition and geologic age, and the Coast range is a distinct system, originating just within the southern boundary and continuing through the whole length of the province. It is an older range than the Rocky Mountains, and consists chiefly of crystalline rocks—granite, gneiss, and schists. It attains a height of 7000 to 8000 feet and abuts on the shore in many places in spurs which, rising almost out of the sea on the borders of abysmal fiords, show the full measure of their height to every observer. This range is very rugged, and on the western side is heavily timbered.



VIEW IN THE COAST RANGE.

The constant condensation from the warm winds of the Pacific has formed many glaciers in the upper seaward valleys of the northern part of the range, and many of the summits are snow-capped. The fiords are usually too deep for anchorage, for they are narrow, submerged valleys of the chain, running up sometimes for 30 or 40 miles between precipitous mountain walls, with a general width of 1 or 2 miles. Where there is any level land on the shore it is densely forested, for the climate is mild and rainy, and the trees grow to an enormous size.

Before passing to the island portion of the province a few remarks may be appropriate concerning the northern portion—that portion described as a square based upon cross ranges of mountains about the parallels of 54° to 55° . Immense areas of this country are yet unexplored. Much of it is a plateau about 2000 feet high. The western portion, watered by the Peace river, is in part open, fertile land, and suitable for a grazing country. An inner range (the Cassiar and other mountains) runs parallel to the Coast range at some distance. In this northern plateau the tributaries of the Liard and the Peace rivers of the Mackenzie system take their rise. On the western side are the Skeena and Stikeen rivers, and far on the northern border of 60° , rising in a series of ranges, are the springs of the Pelly and Lewes rivers, tributaries of the Yukon. Large areas of this country are underlaid with Carboniferous and Devonian rocks, and in the valley of the Parsnip river is an extensive area of Cambrian.

What is known of the geology of this northern half of the province indicates that in complexity and variety it rivals the southern part. Rocks ranging in age from Archæan to Tertiary have been found. While little has

been ascertained about mineral resources, the conditions indicate that metalliferous deposits like those of the south recur here. Gold has been worked by placer mining alone. Except along the coast, at the mouths of the Naas, Skeena, and other rivers where salmon canneries are situated, settlements scarcely exist. At Laketon in Cassiar, Hazleton at the forks of the Skeena, Stuart Lake, and Omenica, a few people, mostly miners, are settled.

Hydrography

The rivers of British Columbia demand notice now. They are in strong contrast with the rivers of central and eastern Canada. Here are no long stretches of a thousand miles of navigation; but the courses of all the rivers are contentious, struggling, and turbulent, circumventing obstacles by unexpected and abrupt bends, or bursting through barriers and rushing down steep and gloomy cañons to the ocean. There are many navigable stretches, but they are not continuous, and the rivers widen to long narrow lakes of still water—Kamloops, Quesnel, Chilco, Tacla, François, Shuswap, Okanagan, Kootenay, Babine, Arrow, and Columbia Lakes are the most important; but the province is studded with similar lakes of smaller size, in strong contrast to the broad expanses of the eastern provinces. Although the Peace and Liard rivers drain a very large area in British Columbia, they are more properly treated in connection with the Mackenzie system, of which they are a part. The most northern river of importance is the Stikeen. It discharges into the Pacific near Fort Wrangell in Alaska. It is 250 miles long, and is navigable by steamers for 130 miles as far as the great cañon. The route to the Cassiar gold mining region passes up by its valley, a difficult and

laborious route at best. A trail from the Grand Cañon leads to Dease Lake, from whence Dease river leads to the Liard river.

The Naas is a large river, but the next important river of the north is the Skeena. It draws its chief supply from Babine Lake, and falls into the Pacific after a course of 300 miles, of which 125 miles, as far as Hazelton, may be navigated by small steamers.

Two river systems only call for notice in the southern or rhombic half of the province—the Columbia occupying the south-eastern corner, and the Fraser occupying all the rest.

The Fraser river is the chief feature of the hydrography of British Columbia. It is 740 miles long, and its tributaries branch out over the country between the summits of the Coast and the Rocky Mountain ranges, south of 54° , excepting the extreme south-east corner. They interlock with the sources of all the great rivers, but though they seem on the map to give access by short portages to the Skeena, the Peace, the Parsnip, the Athabasca, the Saskatchewan and the Columbia, and though they search out all the interior valleys of the great mountain ranges of the southern half of the province, it must be remembered that many of them are unnavigable even with canoes. It is a characteristic Columbian river, being contained entirely within the province, and it accentuates all their peculiar ways. It flows, at first, north-west for 160 miles, then makes an abrupt turn round the head of the Cariboo mountains, and flows directly south until, at Hope, it turns abruptly west and falls, after a course of 80 miles, into the Strait of Georgia at New Westminster. It is a turbulent and rapid river—an exaggerated mountain stream in all its upper courses—at last, summoning to its aid all its tributaries, it bursts its way through the Coast range and foams

and rages through the stupendous cañons which bear its name; then, all its trials over, it issues out a broad and



Notman, Photo.

CAÑON OF THE FRASER RIVER.

noble river, with a rapid current; but navigable for 80 miles from Yale to the sea. The Fraser has many large

tributaries—the Stuart, the North Thompson, the South Thompson, the Blackwater, the Chilcotin, the Lillooet and their branches form a network of flowing waters through all the deep furrows of the interior plateau.

Lastly, in the south-east corner of the province, the Columbia river and its chief tributary, the Kootenay, perform their eccentric evolutions, in a sort of hide-and-seek round mountain ranges, until they find each other just before they cross the frontier together. Their courses resemble the military evolution called a countermarch by ranks. They rise, overlapping each other, in the long western valley of the Rockies and flow past each other in opposite directions, as it were elbow to elbow, just grazing each other at the head of Columbia Lake, so closely that a canal a mile long unites their waters. The Kootenay flows south into the United States, and the Columbia flows north to the head of the Selkirks at the Boat Encampment; until, having got 300 miles away from each other, they both turn abruptly about and counterflow inwards in opposite directions—the Columbia south to the Arrow Lakes, and the Kootenay north to the Kootenay Lake in British territory, from whence it flows across to join the Columbia 20 miles from the United States frontier. Commodious steamers navigate the Columbia from the Columbia Lake to the first crossing of the Canadian Pacific railway, and from the second, crossing at Revelstoke through the Arrow Lakes to the boundary. The Kootenay is navigable from Kootenay Lake to some distance within the United States.

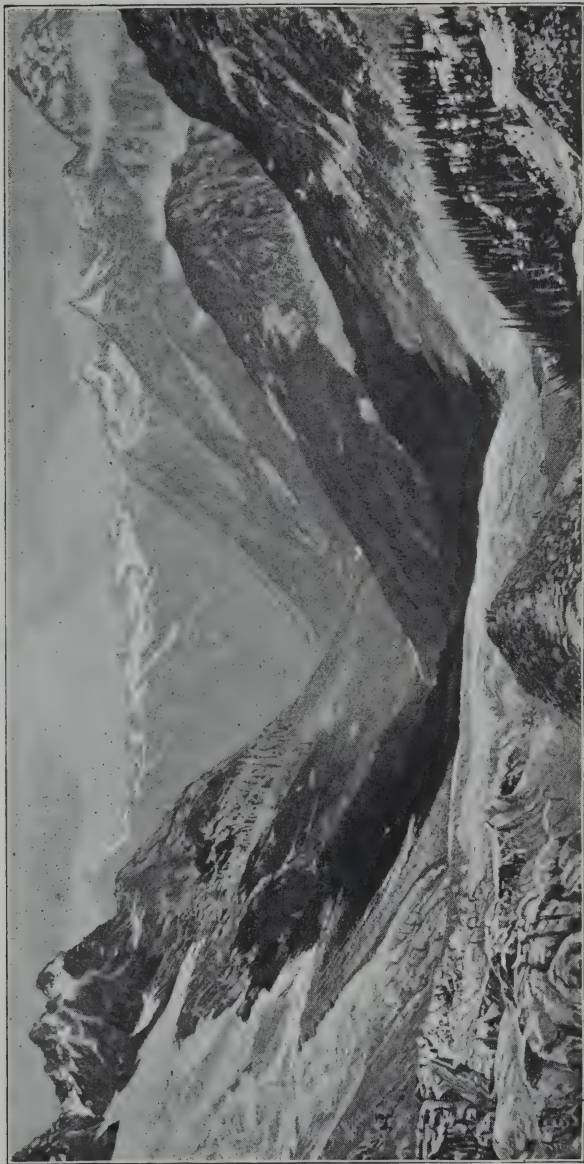
Discovery and Development

This immense territory was an unknown land, hidden behind the barrier of the Rocky Mountains, until 1793,

when Mackenzie entered it by its natural gateway, the Peace river. He followed that stream to its forks, and then traced up its chief tributary, the Parsnip, to its source, and crossed a short portage into the waters of the Fraser. The North-west Company soon followed up his discoveries with their trading posts, and, on the union of the great fur companies, the Hudson's Bay Company established on the Columbia river the headquarters of their operations in the Pacific district. Communication was by pack trails through the Yellow-head or Athabasca passes to the Boat Encampment at the great bend of the Columbia, where the packs were transferred to clinker built boats and floated down to headquarters on the lower Columbia. The other portions of the country were little visited, for the navigation of the rivers is difficult, and travelling was more by trails than by the streams. Until the railway was completed, only ten years ago, all access to the province was through the United States, and heavy goods were carried round by Cape Horn. The construction of the Canadian Pacific railway was essential to the continued existence of the Dominion of Canada, and the people rose to it. The railway is the answer of the native Canadian spirit to the foreigners, within and without, who wish to bring strange fire to burn on our hearths, and to smother the aspirations of a people whom they neither appreciate nor comprehend.

Canadian Pacific Railway

The Bow river takes its rise in glacier-fed lakes high up in the heart of the mountains, 5530 feet above sea level, and issues out upon the lower levels at the foot-hills through a cyclopean portal known as "The Gap," flanked by two almost vertical mountain walls. Through this



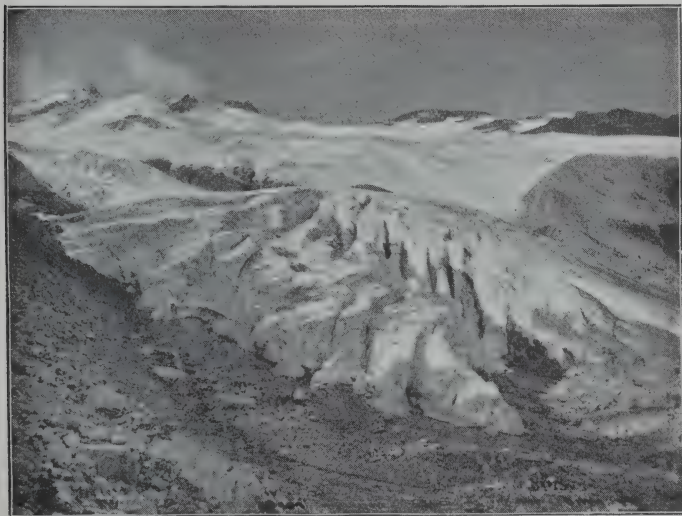
Netman, Photo.

THE HEART OF THE SELKIRKS.

portal the Canadian Pacific railway enters the mountains, and it follows up the Bow river to Laggan, 7 miles from the summit of the pass; thence it follows a small tributary creek through the connecting valley across the divide. On the summit of the divide (5296 feet) is Stephen Station, named for Lord Mount-Stephen, the first president of the road. Two miles farther west is Lake Wapta—the source of the Wapta river, whose precipitous course the railway follows to its junction with the Columbia. This stream, and the pass itself, was discovered about 1858 by Sir James Hector, and is known also by an English name—"the Kicking-horse." It quickly gathers volume from the neighbouring glaciers. In the first five miles it falls 1100 feet, through rapids and deep and narrow cañons and over steep falls, and in a short course of 40 miles it drops 2746 feet to the town of Golden. The railway follows the river, crossing from side to side and clinging along the ledges of dizzy precipices. It issues out at last from a gloomy cañon upon the broad valley of the Columbia river flowing quietly on its northward course.

By the selection of the Wapta Pass the first parallel of interior mountains, the Purcell range, has been flanked; but here, at Golden, is seen, across the valley, the range of the Selkirks, its steep forest-clad slopes rising through lofty glaciers in snow-crowned peaks—a precipitous mountain rampart 10,000 feet high, over which, until 1883, no foot of white man or savage had ever passed. Beyond this range in a direct line is the Eagle Pass through the third or Gold range, and, by following up the Columbia 100 miles north to the Great Bend, the Selkirks might also be flanked, but every mile would have to be travelled back to cross the Gold range at the Eagle Pass. The Government of Canada had intended to cross the Rockies farther north by the Yellow-head Pass, and follow down

the North Thompson to Kamloops, which was the objective point in all the proposed routes, but the company which had assumed the work resolved to avoid so long a circuit, and to pass through to Kamloops on a direct western course. With amazing courage and faith they built their line



THE ASULKAN GLACIER.

from both ends, and in 1883 the sagacity of Major Rogers discovered a pass over the Selkirks so long sought in vain.

Leaving the town of Golden the railway follows north along the Columbia to Donald, where it crosses and continues along the western bank to Beavermouth. There the Beaver river issues from the mountains, through a gorge so narrow that a felled tree might span it. Up the steep valley of this stream the railway climbs its dizzy way, clinging to the precipitous sides of the lofty mountains, and winding in sharp curves round rocky

spurs, or tunnelling through them when no ledge could be found. Half-way up the ascent the main Beaver valley is left for that of Bear Creek, and, between two gigantic peaks, the summit of the Rogers Pass spreads out into a pleasant mountain meadow 4300 feet above the sea. The summits of all these mountain passes have been



THE GREAT GLACIER.
Showing the C. P. R. Hotel.

reserved from sale by the Dominion Government to form parks, and this is the grandest of all, for the great glacier of the Selkirks is very near, and many other glaciers are visible among the distant peaks.

The road descends for a second time to the Columbia by the valley of the Illecillewaet, a stream which hurries its headlong career down 2825 feet in 46 miles. Some great feats of engineering are performed in this descent, and here is the great loop where the road doubles back on itself in four tracks winding down to lower levels ;

and after passing through stupendous cañons and gorges it at last emerges once more upon the Columbia now flowing southward, a quiet navigable stream with all its turbulent rapids behind it.

Near Revelstoke the road crosses the river and enters the Gold range by a pass, at its highest point only 525



THE GREAT LOOP IN THE SELKIRKS.
Showing four Railway Tracks.

feet above the level of the Columbia. Four beautiful lakes occupy the whole width of the summit level, and the road follows the Eagle river, the outlet of the westernmost, down to Sicamous Junction in the interior plateau of the province. Sicamous is upon the group of lakes called the Shuswap lakes, and there a railway branches off south to Vernon on Okanagan lake. The Pacific Railway follows along the South Thompson to Kamloops, and along the south shore of Kamloops Lake, plunges into

the black cañon of the Thompson, and emerges to follow the Fraser in its Titanic struggles through narrow cañons to reach the sea.

There are not many other railways in the province. The chief interest is centred at present in the Kootenay district, where several lines are in course of construction.



Notman, Photo.

THE CAÑON OF THE FRASER RIVER, ABOVE SPUZZUM, B.C., ON THE
CANADIAN PACIFIC RAILWAY.

A railway connects the Arrow, Slocan, and Kootenay lakes from Nakusp to Kaslo. There is also a railway from Nelson to Fort Sheppard. It continues across the frontier and connects with the Great Northern at Spokane, and a branch connects Nelson with Robson. A short line is also built to Trail Creek and Rossland. A branch road

at Mission City on the lower Fraser connects with the United States roads; and Vancouver, the terminus of the Canadian Pacific railway, is thus connected by rail with the southern railway system. On Vancouver Island the coal region of Nanaimo is connected by a railway with Victoria and the harbour of Esquimalt.

The Coast

Only one aspect of the geography of the Pacific province of the Dominion has so far been considered. It is far more than a region of lofty mountains and rapid rivers; it is a maritime country with one of the most remarkable sea coasts in the world, measuring, with all its indentations 7000 miles in the aggregate, abounding in commodious harbours, and fringed with an archipelago of innumerable islands. Of these the largest is Vancouver Island, and upon it Victoria, the capital city of the province, is built. This island is 285 miles long, and from 40 to 80 miles wide, covering an area of about 20,000 square miles—very nearly the size of Nova Scotia, its counterpart on the Atlantic. Vancouver Island is bounded on the south by the Strait of Juan de Fuca, and is separated from the mainland of the province by the Strait of Georgia and Queen Charlotte Sound. The mountain ridge which forms the backbone of the island rises again from the ocean on the north to form the Queen Charlotte Islands, an extensive group at present inhabited by the Haida Indians and a few white settlers. The partially submerged range of mountains forming the nucleus of these islands runs parallel to the Coast range of the mainland; and, while it consists largely of crystalline rocks, it contains areas of the Cretaceous formation, in which are extensive basins of true coal; bituminous in Vancouver, and anthracite, as well as

bituminous, in Queen Charlotte Islands. The general height of the mountain range is from 2000 to 3000 feet on Vancouver Island. Some of the peaks are 6000 feet, and Victoria Peak is 7484 feet high. On the Queen Charlotte Islands some of the higher summits are 5000 feet. The islands of this group are generally mountainous, but the north-east part of Graham—the largest island—is a gently rolling plain. All the islands are densely forested. As might be expected, the waterways around and throughout the whole archipelago fringing the coast of British Columbia are exceedingly deep, and the shores are bold, for they are the longitudinal and cross valleys of the sunken range.

The Strait of Juan de Fuca, from the open ocean to the shore of the mainland, is 100 miles long. For 60 miles it runs along the densely wooded coast of Vancouver Island, with a width of 11 miles of very deep water. As it turns round the southern end of the island, it is subdivided by islands into many channels. Three of them are broad, and navigable for the largest ships; the Haro, the Middle, and the Rosario channels. According to the Ashburton Treaty, the boundary line was to be continued from the parallel of 49° to the ocean, through the centre of the channel of the strait. This centre has been decided to be the centre of that one of the three principal channels which is nearest to British territory.

The Strait of Georgia extends in a north-west direction, and is continued by many channels through a crowd of smaller islands into Queen Charlotte Sound. The strait varies in width from 14 to 20 miles. All the channels are deep—the soundings range from 70 to 200 fathoms. All the way along the coast of the province, from its southern point, and even much beyond it, to Cross Sound in Alaska, the largest ocean steamship may pass

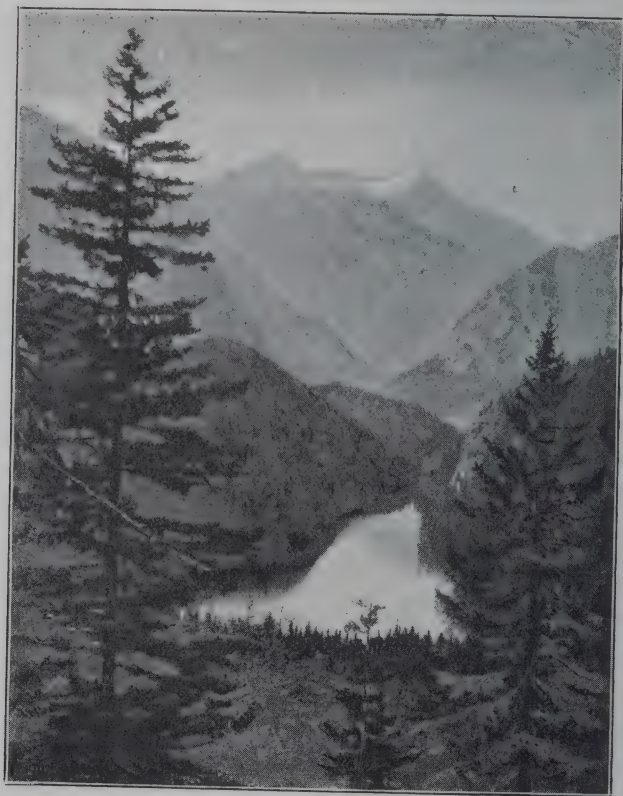
securely through sheltered channels for 800 miles ; and, except for a very short distance, without encountering the swell of the main ocean. The Queen Charlotte islands are separated from Alaska by the Dixon Entrance, and from the main province by Hecate Strait.

The parallel of 49° , the southern boundary of the mainland, is marked by a granite monument 25 feet high, erected on a bluff on Boundary Bay. Across the bay, and projecting from Canadian soil, a little spit of land, Robert's Point, ventures for a mile across the line of 49° , and is snipped off into the United States. Lord John Russell mildly suggested that this little projection could not possibly be of any use to the United States, and might be left to belong to the land it grows out of ; but the hint was not taken, and it remains, together with the little bit in the north-west angle of the Lake of the Woods, a curiosity of diplomacy and a singular convenience to smugglers.

About 15 miles north of the boundary is the delta of the Fraser. The city of New Westminster, at one time the capital of the mainland province, is built at the mouth of the river where the delta commences. Ships drawing 14 feet can pass 30 miles up the stream as far as Langley. Seven miles north of New Westminster Burrard Inlet stretches for 12 miles into the land—an arm of the Strait of Georgia, an ideally perfect harbour, 2 to 4 miles wide, and opening practically into three harbours, commodious, and with excellent anchorage all over. It is easily accessible, and open at all seasons. When the Pacific terminus of the Canadian Pacific railway had to be decided upon, it was impossible to overlook a place so marked out by nature for the purpose. Halifax on the Atlantic and Vancouver on Burrard Inlet on the Pacific are twin harbours unexcelled

in the world, and both within easy reach of coal, the all-important factor in modern navigation.

Passing northward, all along the coast, deep sounds or



HEAD OF BUTE INLET AND WADDINGTON HARBOUR.

inlets penetrate far inland—Howe Sound, Jarvis Inlet, Toba Inlet, Bute Inlet, Loughborough Inlet, Knight Inlet, Kingcome Inlet, and many others. They spread out into branching arms within their entrances. Many are too

deep for anchorage, but they are sheltered by steep-up mountains rising 5000 to 8000 feet. Some of these inlets run up 40 miles into the land, and usually at their termination the land is low and some river forms a little delta. The scenery on these fiords is grand in the extreme.

The dense archipelago, through which the Strait of Georgia passes into Queen Charlotte Sound, is permeated by numerous channels of deep water, and the islands are high and bold. Discovery Passage, the chief channel, is close to the Vancouver shore. It is on an average a mile wide, and is from 30 to 60 fathoms deep. At Seymour Narrows, the tides flowing from the north cause swift currents; for the passage closes in there to a width of about one-third to one-half of a mile.

The same general characters prevail on the coast of Vancouver Island. The harbour of Esquimalt on the Strait of Juan de Fuca is another of these ideally perfect harbours like Halifax and Burrard Inlet. It is very easy of access and very commodious; opening out, from an entrance one-third of a mile across, to a broad sheet with good anchorage all over in never less than 6 fathoms. A railway to the coal mines at Nanaimo makes it complete as a naval station. It is the chief station on the Pacific for Her Majesty's navy; and a dock 480 feet long, 65 wide, and with $26\frac{1}{2}$ feet over the sill, affords every facility for repairs. Only 2 miles distant is the harbour of Victoria; the inner harbour is available for ships drawing 14 or 15 feet, but somewhat intricate of entrance. Outer wharfs, with 30 feet of water, provide for large steam-ships. An excellent harbour is found at Nanaimo for the large coaling fleet which clusters there.

The outer or west coast of Vancouver Island is a repetition of the mainland coast, but on a less magnificent

scale. The inlets are there also, and they search far into the land, but the mountain sides are not so high, and anchorage within them may be conveniently found. Alberni Inlet is 20 miles long, with a fine harbour at its head. It is a lumber-shipping port, for all the island is densely wooded with fine timber. The width of the inlet varies from half a mile to one mile. Nootka Sound is 6 miles wide and stretches three arms into the land, 7, 14, and 18 miles long respectively, with a depth of 40 to 160 fathoms. Clayoquot, Esperanza, Kyuquot, and Quatsino Sounds also penetrate deeply into the island. There are many smaller bays, and all are surrounded by high land, but the mountains on the island are in general much lower than on the mainland shore. The interior of Vancouver Island is very little known, but resembles the mainland in having many long mountain lakes. It is a rough country with dense undergrowth and difficult to traverse.

Climate

The climate of British Columbia is as varied as its complex geography would indicate. It is the resultant, in the main, of the prevailing westerly winds impinging upon a coast bordered by a high mountain range and blowing over a territory of successive mountain ranges of increasing height. Where the winds strike fairly the climate is moist, and under the lee of the mountain ranges it is dry. In the northern part of the province the Rocky Mountains are lower and do not afford so much shelter from the easterly and northerly winds, from across the plain or from the regions of the Arctic Ocean. The climate of the northern interior is therefore a continental climate, and, excepting on the coast, it is cold in winter and warm in summer. The con-

ditions of climate on the west coast of America are the same as in western Europe with the important difference that in Europe the westerly winds do not encounter the full broadsides of the mountain ranges, but the coasts are low, and such ranges as there are run mostly east and west with the axis of the land and are taken in flank by the winds from the ocean.

The inner coast of Vancouver Island is drier than the ocean coast, being sheltered by the mountains, and the clouds bearing moisture from the ocean pass over to the mainland. In summer the south-eastern end of the island enjoys cool breezes from the snow-capped Olympian Mountains to the south, so that the climate of Esquimalt and Victoria is like that of South Devonshire, but drier. At Esquimalt the mercury, in the course of years, rarely goes below $21\frac{1}{2}$ in winter or higher than 79 Fahr. in summer. On the mainland it is more humid, for the clouds are arrested by the Coast range, and yield up a large portion of their moisture in ascending the western side of the mountains. This is the region of the densest forests and the largest trees.

Under the lee of the Coast range is a long strip of arid land, where the soil, though excellent, requires irrigation to produce crops. At the Gold range, the Selkirks, and the Rocky Mountain ranges these conditions are repeated. The higher strata of air from the west and the descending clouds are deprived of their last particle of moisture by the successive ranges of mountains. The most easterly of these ranges is the highest so that, when the movement of the atmosphere over the eastern plains draws away from the mountains, the western winds come down from the Rockies perfectly dry, producing the phenomena of the Chinook winds described in a previous chapter.

Proceeding northward along the coast the climate becomes more humid, as the winds from the Japan current strike more squarely against the mountains. The summits are perpetually snow-clad, and great glaciers form in the upper valleys. The snowfall in winter is much lighter across the range, though the climate is colder.

Illustrating these general statements by concrete examples, it is thus explained why the climate of Vancouver Island is so genial, and why, although there may be slight falls of snow in winter, the snow lies so short a time. On the mainland at New Westminster, the Fraser river in some winters may freeze for a few weeks, but the winter is more a rainy season than a season of snow and ice. On the interior plateau in winter the thermometer sometimes falls below zero, as shown by the following tables. The snowfall is light, but many of the lakes are frozen from December to March. Far to the north in the region of the rivers draining into the Mackenzie the climate corresponds to the conditions of that basin. At the far south-east corner of the province, the Kootenay and the Columbia valleys have a climate of their own. They are high and inclosed by mountains. The precipitation is not nearly so great as on the coast—the snowfall is light, and on the western slope of the Rockies there is sufficient rainfall. Navigation is continuous all the year round on the Columbia and the Kootenay lakes. It is cold in winter, but owing to the elevation the air is rarified and the climate is bracing and invigorating.

The westerly winds frequently bring fog along the coast to such an extent as to embarrass navigation in the fall months. The same general conditions as to fogs exist on the coast of North-west America as along the corresponding coasts of North-west Europe. The follow-

ing tables set forth in concrete shape the varying climates of the province:—

METEOROLOGICAL TABLE FOR JANUARY, FROM THE OBSERVATIONS OF A SERIES OF YEARS—AVERAGE REGISTERED TEMPERATURES AND PRECIPITATION.

Locality.	Name of Place.	Temp. Lowest.	Temp. Highest.	Precipitation in inches.
S.E. Coast Van. I. .	Esquimalt . . .	21·6	53·1	5·01
West „ „	Alberni . . .	20·6	56·2	13·83
Mainland coast, S.	New Westminster . .	15·2	52·2	9·71
„ „ N.	Port Simpson . . .	7·5	55·1	10·85
Interior Plateau .	Spence's Bridge . .	- 3·4	49·6	1·15
„ „ .	Kamloops . . .	- 8·7	48·1	0·48
„ N. Cariboo	Barkerville . . .	-20·9	39·4	3·04
„ far North .	Stuart Lake . . .	-37·7	43·1	2·97
Kootenay, S.E. corner	Fort Steele . . .	-25·1	46·8	2·90

Snowfall reduced to inches of water, 10 in. snow = 1 in. water.

METEOROLOGICAL TABLE FOR JULY, FROM THE OBSERVATIONS OF A SERIES OF YEARS—AVERAGE REGISTERED TEMPERATURES AND RAINFALL.

Locality.	Name of Place.	Temp. Lowest.	Temp. Highest.	Precipitation in inches.
S.E. Coast, Van. I.	Esquimalt . . .	44·5	79·4	0·43
West „ „ .	Alberni . . .	41·9	93·1	0·82
Mainland coast, S. .	New Westminster . .	46·9	89·5	0·57
„ „ N. .	Port Simpson . . .	39·2	72·8	5·36
Interior Plateau .	Spence's Bridge . .	48·5	100·9	0·41
„ „ .	Kamloops . . .	48·7	97·3	2·29
„ N. Cariboo	Barkerville . . .	33·9	83·2	3·08
„ far North .	Stuart Lake . . .	28·3	92·0	1·52
Kootenay, S.E. corner	Fort Steele . . .	33·9	95·2	1·08

TOTAL ANNUAL PRECIPITATION—AVERAGE OF A SERIES OF YEARS.

	Station.	Inches.
S.E. coast of Vancouver Island	Esquimalt . . .	40·34
Mainland coast, S. . . .	New Westminster . . .	41·72
„ „ N. . . .	Port Simpson . . .	105·96
Interior Plateau	Spence's Bridge . . .	9·96

TOTAL NUMBER OF DAYS OF FOG, 1895.

		Days.
S.E. Coast of Van. I.	Esquimalt	26
West „ „	Alberni	31
Mainland coast, South	New Westminster	4
Interior Plateau	Spence's Bridge	2
„ „	Kamloops	0
„ N. Cariboo	Barkerville	0
„ far North	Stuart Lake	2
Kootenay, S.E. Corner	Fort Steele	0
Of the 26 days of fog at Esquimalt 15 were in October and November.		
„ 31	„ Alberni 30	„ „ „

Forests

The forests of British Columbia are of immense extent, as has been incidentally shown in the preceding pages. They consist almost entirely of conifers, and the varieties are few. On Vancouver Island there are areas of oak, and poplar is found throughout the province. The broad-leaved maple is met with on the lower reaches of the Fraser and in the country around Victoria. Many other trees are found, but of the total output of all the lumber mills of the province 85 per cent is from the Douglas fir. It is tough and strong, and is highly valued for ships' spars as well as for building purposes. The lumbering industry, though the oldest in the province, has not, however, attained the development which might have been anticipated, for the province has practically been opened only recently to the world, and capital is drawn chiefly towards mining and fishing.

Entering the province from the east the chief trees of the Rocky Mountains are white spruce, Engelmann's spruce, black pine, balsam fir, and Douglas fir. Spruce, black pine, and Douglas fir, with poplars and a few other deciduous trees, characterise the valleys. The western

slopes, where not too rocky, are generally thickly clothed with spruce or black pine; the Douglas fir does not there grow very high. The balsam fir and black pine, with Lyell's larch, attain a higher elevation than the other trees, and die away in stunted growths along the snow-line.

Nearly the same trees recur in the Selkirk and Gold ranges, but in sheltered valleys the cedar grows very large, and great tall western white pines are found. Hemlock grows in some localities, and the western larch, a tall, slender, straight tree, occurs in others.

It is in the valley of the Columbia that the cedar begins to assume the huge proportions which distinguish it in this province. On crossing the Gold range and descending upon the interior plateau, the absence of sufficient rainfall is immediately evident. The yellow pine becomes the most prominent tree in the valleys, growing in clumps or singly in open lands. Higher up on the plateaus, Douglas fir, spruces, and black pine form thick woods, and white-barked pine is found in some places at high elevations. Then, upon crossing the Coast range, the traveller enters into a dense forest region extending down to the ocean and covering Vancouver Island; for the humid western winds have their full influence, and nourish into their wonderful growth the gigantic firs and cedars, which astonish all who see them for the first time.

The Douglas fir is often found 300 feet high, and from 10 to 12 feet in diameter. The trees which are the best for handling and make the best lumber are those 5 to 6 feet in diameter, and running clear to 160 feet to the first branch.

The cedar (*arbor vitae*) is, however, even larger than the Douglas fir. It sometimes attains the enormous girth of 60 feet. It is used for fine dressed lumber and for shingles, as these trees decay at the heart on attaining

maturity. Though hollow, they remain perfectly healthy. The grain of this wood is very beautiful, and it is exceedingly durable.

Other trees attain a great size on the coast region. The yellow cedar or cypress does not extend far inland, but is found throughout Vancouver and the Queen Charlotte Islands, especially on the west coast. It is often 6 feet in diameter. Oak is met chiefly on the south-eastern part of Vancouver Island, and is often 3 feet in diameter. The western hemlock is found wherever there is abundant moisture, and on the coast often grows to a height of 200 feet. Yew occurs along the coast and on Vancouver Island, and attains a diameter of 18 inches to 2 feet. The alder becomes a small tree, and is sometimes two feet in diameter on the lower Fraser. The broad-leaved maple sometimes attains a diameter of 4 feet. It is never found far away from the coast-line.

The total amount of lumber cut in 1895 was 112,884,640 feet, of which 52,043,670 feet were exported.

Minerals

The mineral resources of British Columbia cannot be easily over-estimated, for new discoveries of importance are continually being made. The great Cordilleran belt extends throughout the province, in many ranges, with a width of 400 miles. These mountains, through the whole length of the two American continents, by whatever name they are called, are known to be highly metalliferous, and they preserve that character in the immense development they attain in this province. As previously observed, the interior mountain ranges of the south are classed very frequently together under the general name of the Gold mountains, as being the source of the gold in the

river valleys, and it may be said generally that the rivers of the province are all auriferous. The Fraser, with its affluents, is a true Pactolus, for it drains in its rapid course all the interior mountain ranges of the southern half of the province, and far up in the almost inaccessible north similar conditions exist. Placer mining is carried on in the Omenica district in the basin of the Peace river, and some of the bars on the Liard are worked for gold. The Pelly, the Lewes, the Stuart, and other chief sources of the Yukon are all known to be auriferous, and, undeterred by distance and hardship, miners are working on these streams, and have taken out considerable quantities of gold by the rude methods which alone are possible where communications are so difficult.

It is a note of the universal distribution of gold that it was first observed in 1851 on the coast of one of the Queen Charlotte Islands, and it is recorded that \$20,000 was taken out, and that working was abandoned because the reef ran under the sea, and could not be followed for more than a few feet down. In 1857 the mines of the Thompson river, a chief tributary of the Fraser, were discovered. Then the riches of the Fraser became known, and soon, in searching for coarse gold, supposed to be the source of the lower washings, the miners pushed up to the Cariboo country, then almost inaccessible among forests and mountains, and even now only reached by 285 miles of staging. Until 1895 half the gold found in the province came from this remote region.

From 1858 to the end of 1896 the aggregate of placer gold yielded was \$57,704,855. This was entirely the result of different methods of placer mining, for the most part, of a very unscientific kind. The largest amount obtained in any one year was \$3,735,851 in 1864. Since that time the yield has decreased as the surface

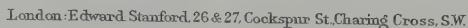
deposits were exhausted. In the year 1896 the product was \$544,026, a reaction from the lowest point reached, probably caused by the adoption of improved hydraulic methods, and the recent introduction of machinery as capital was drawn in this direction. Nearly all was from the districts of Yale and Cariboo. In addition to the above, the production of metals from lode mines in the year 1896 reached the sum of \$4,257,179, nearly all from the Kootenay country now being opened up. The product of 1895 was almost doubled. Of this aggregate \$1,244,180 was of gold, and \$2,100,689 was of silver.

Wherever the interior ranges extend gold is found in the streams. Placer mining is carried on at the great bend of the Columbia, on the Illicillewaet, on the Similkameen, and in the Okanagan and Kootenay districts. Most of the bars of the Fraser having been exhausted, the bed of the river is now leased to companies, who are dredging the river bottom for alluvial gold, under the belief that more of the gold would sink to the bottom of the eddies than would be caught on the bars.

Not only are mining operations carried on in these central regions of the province, but the Cassiar region in the north-west of the mainland contributed in 1895 \$22,575 to the general aggregate. This is not a large amount, but it is the result of the labour of a few individuals, and illustrates the wide distribution of gold over the province. In 1896 gold was discovered at Alberni, on Vancouver Island, but beyond that general fact no particulars have been recorded. China Creek, in that part of the island, has been worked intermittently since 1862.

The greatest recent development in mining for the precious metals has, however, taken place in the Kootenay

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Stanford's Geog.^l Estab.^t London

district during the last two or three years. The chief mines are on Kootenay Lake, on Slocan Lake, on Trout Lake, on the Illicillewaet, and at Trail Creek, where it falls into the Columbia near the frontier. The ores are varied in character. Most of them are galenas carrying silver, and many are pyrites carrying gold. The average amount of silver may be 100 ounces to the ton; many yield much more, and some less. When they carry gold, the quantity varies all the way from \$2 a ton to an ore which is worked chiefly for gold. The lead ores contain an average of 70 per. cent of lead.

Other mines in the same district contain gold and silver in varying amounts, mixed generally with sulphides of copper and iron. It is not easy to give any summary description of such mixed ores, nor is it easy to ascertain their value with sufficient precision. They may be roughly classified into three divisions: 1. Silver-lead ores, found chiefly at Ainsworth, Kaslo, Slocan, and on the Illicillewaet. These yield from \$20 to several hundred dollars a ton in silver, besides the value of the lead. 2. Copper ores holding silver, found at Toad Mountain. These are similar to the previous class, but contain much copper. 3. Iron and copper pyrites holding gold, found chiefly in the Trail Creek district, yielding from \$8 to \$40 or more in gold per ton, and some copper. They are all exported either as crude ores, as "matte," or as argentiferous pig-lead. Several smelting and concentrating plants are in operation, and more are being erected.

While these pages have been passing through the press the mining interests of the province have been advancing with enormous strides. It is now beyond all question that British Columbia is destined to become one of the most important regions in the world for the pro-



ROSSLAND.

duction of the precious metals. The town of Rossland is not two years old, and has now 7000 inhabitants, with churches, hotels, water-works, electric light and newspapers; and, what is of prime importance, the most perfect civil order. The love of civil liberty combined with order existing in the province is strikingly shown by the fact that in Rossland, crowded as it is by miners, the majesty of the law has been represented by one single constable. No one questions his authority, and no one is allowed to carry weapons of any kind. Gamblers and card-sharpers coming to start their evil trade are requested to leave and always accept the advice. Two mines in this district (Trail Creek) have paid \$332,500 in dividends up to July, 1896. Six or seven other mines are now shipping ore, and development is rapidly going on. These are mines of high grade gold ore. There is also an enormous quantity of low grade gold ore, only waiting for increased facilities of transportation to be made available. The average net value of the ores already mined is \$37.18 per ton.

Although, at the present moment, the gold mines are attracting more attention, production in the silver and lead mines of the Slocan district is going on quietly and steadily. There are over fifty mines shipping ore in paying quantities. One mine in the district was discovered only in 1891, and up to July, 1896, has paid \$300,000 in dividends. Other mines are commencing to pay dividends, but up to the present the product has mostly been spent in developing the properties. All these mines are in West Kootenay, but rapid advances are being made all over the province. The district of East Kootenay gives as good promise, but there are no facilities of transport, and development must wait until the district can be easily reached. The Boundary Creek



KOOTENAY LAKE.

district is also a richly mineralised region, and many quartz ledges, with free milling gold, are found there and in the Okanagan district. It has become evident during the last few months that if the trade of this rich region is not to be carried off to the United States in permanence, a railway must be built through the Crow's Nest Pass, and the Canadian Pacific railway is preparing to build it. Then the coal of Alberta, and the wonderful coal deposits in the pass itself will supply the smelting-works, at a low rate, with coke which now costs from \$15 to \$17 a ton. The East Kootenay district will then be opened up, and the masses of lower grade gold ores in West Kootenay will become available. This rapid progress is not limited to the Kootenay region. The whole province is feeling the stimulus, and every day brings new evidence of metallic wealth from all parts of the country; and while investors there, as everywhere, must be careful to ascertain that they are buying shares in a real mine and not in a prospect, there are legitimate and profitable openings for all the capital, industry, and skill, which can be brought into the province. What is most needed is cheap transportation. The communications of West Kootenay are good, but they chiefly lead into the United States, and there, after concentration, the ore goes finally to be reduced.

The Trade and Navigation returns of the Dominion just published, for the year ending 30th June, 1896, give the chief items of mineral exports from British Columbia as follows:—

Gold bearing quartz, dust, nuggets, etc.	\$1,097,193
Copper ore, matte, or regulus	156,792
Lead	408,625
Silver ore concentrates, etc.	1,595,448
	<hr/>
	<u>\$3,258,058</u>

the exports of the latter half of 1896 ran rapidly up, and they increased as each new mine came into active operation. The approximate value of the exports of minerals from Nelson in West Kootenay during the first two months of the year 1897 was \$999,138.

Platinum is found in the Similkameen district. The export was in a previous year \$10,000 in value, but in 1895 only \$3,800 was reported. Mercury is found as cinnabar near Kamloops, and at Alberni on Vancouver Island. Iron ores occur in many places throughout the province; at Alberni, and on the mainland. They are found in the Nicola Valley near beds of coal; but the only iron ore mined is on Texada Island, where it occurs in large quantity as magnetic iron ore, and is exported to the United States. Shipments have also been made from Redonda Island and from Kamloops. The preceding are metallic minerals only; but mica, asbestos, marble, gypsum, slate, graphite, and other non-metallic minerals of value are also found. The mineral wealth of the province has only commenced to be apprehended by the public, even in Canada, since the opening of the Canadian Pacific railway.

The total production of minerals in British Columbia for the calendar year 1896 was \$7,146,425.

Coal

However defective may be the general knowledge outside as to the metalliferous resources of the province, its wealth in coal is sufficiently well known. It leads the market of San Francisco, and is exported to Hawaii, Petropaulovski, Alaska, and elsewhere on the Pacific coasts. Here again the province has been favoured by nature, for coal occurs in many places and in extensive

areas readily accessible by sea and of superior quality; for it is acknowledged to be the best on the whole coast of the Pacific, and, in fact, there is no coal on the coast until Puget Sound is reached. A heavy United States duty is not able to keep the Vancouver coal out of California.

The only mines which are extensively worked are on Vancouver Island, at Nanaimo, and at Comox. The coal is a bituminous coking coal, and is found in seams of 6 to 10 feet thick on the very shore of the Strait of Georgia, and on harbours suitable for the accommodation of the largest vessels. The mines of Nanaimo have been worked for forty years with an increasing output, as the trade of the Pacific Ocean has been developed. The first regular custom-house returns are in 1860. The following figures will show by decades the growth of the trade. The area of the coal-measures at Nanaimo and Comox is estimated at 500 square miles.

EXPORT OF COAL FROM NANAIMO MINES

					Tons.
1860	.	.	.	.	14,247
1870	.	.	.	.	29,843
1880	.	.	.	.	267,595
1890	.	.	.	.	678,140

In 1894 the total output was 1,012,953 tons. The total export for that year was 827,642 tons, and, of the last quantity, 649,110 tons were exported to California. The output in 1896 was 846,235 tons—a falling-off from 1894.

TABLE OF THE OUTPUT OF COAL FROM THE MINES AT NANAIMO

	Tons.			Tons.
1853	2,000	1893	.	978,294
1874	81,000	1894	.	1,012,953
1890	678,140	1895	.	939,654
1891	1,029,097	1896	.	846,235
1892	826,335			

As before stated, a seam of excellent coal 5 feet 7 inches thick, with some thinner seams, occurs in the Nicola Valley, and coal has been found also near Kamloops, and on the North Thompson on the mainland. On Graham Island, one of the Queen Charlotte Islands, most important deposits are found, both of bituminous and anthracite coal of the best quality. There are two beds of anthracite and three beds 7 feet to 16 feet thick of bituminous coal.

During the last few years a coal area of very remarkable extent has been discovered in the Crow's Nest Pass of the Rocky Mountains. There is an outcrop of from 30 to 40 miles on the Elk river side. One seam is 30 feet thick, another is 20 feet, another 15 feet, and the others are from 2 to 7 feet, twenty seams in all, rising successively one over the other to near the summit of the pass. These seams are cut by three creeks, and thus exposed for working. A railway is proposed from Lethbridge on the Canadian Pacific railway over the Crow's Nest Pass to the East Kootenay district, and the coal will then be available for smelting the ores of the numerous mines in that region. The area of this coal-field is estimated to be 144 square miles, and as the aggregate thickness of the seams is 132 feet of coal, an idea may be formed of the immense quantity available. The coal is bituminous, of excellent quality; fifteen of the seams are of cannel coal.

In the same region—East Kootenay—petroleum was found, in 1891, oozing from the shale. Natural gas was observed at the same time, and lighted with a match. These indications have not been followed up. The communication with the region is too difficult to make these resources available.

Fisheries

There are treasures of the ocean also which must be taken into account in any enumeration of the resources of British Columbia. There are sea fisheries of halibut, rock cod, red cod, anchovies, herring, and of many other kinds. In 1895 2,586,700 lbs. of halibut were exported, but all these are dwarfed by the amazing runs of salmon in the rivers. The dense masses of fish which crowd up the Fraser must be actually seen to be believed in.

The salmon of British Columbia differ from those of the Atlantic coast, and so much confusion exists in relation to the subject, that the following memorandum has been obtained from Professor Prince, the Commissioner of Fisheries for Canada, whose scientific reputation gives it authoritative value:—

“The rivers of British Columbia are resorted to by at least seven different species of salmon. Four of these are of great economic importance, viz., the Quinнат, the Sockeye (Sawquai), the Cohoe and the Steelhead.

“The Quinнат, or spring salmon, are the first to ascend from the sea. They run from spring until July, but they are not sufficiently numerous to be of great value for canning. Their large size, varying from 20 lbs. to 40 lbs., or even 80 lbs. weight, renders them inconvenient to handle, as the many processes involved in canning make uniformity in size very desirable. They are canned, however, to some extent, and the quality of the flesh is most excellent. They are perhaps the best salmon caught in Pacific waters, but as compared with the vast “runs” of other Pacific salmon the Quinнат do not ascend in great numbers. They appear to frequent the Strait of Georgia and inshore waters during the

main part of the winter, and are then taken by Indians and anglers who troll for them with spoon-bait.

“The Sawquai, in current conversation Sockeye, or red salmon, is the most valuable of all the British Columbia fish. The great canning industry may be said to be dependent on the supply of this fish, which ascends the river, in incredible quantities, from the end of June until September. The Sawquai is a small species, 6 lbs. to 10 lbs. in weight, and its flesh, being firm and of a rich red colour, gives it pre-eminence in the market. When the Sawquai run draws to a close, the canneries, for the most part, cease operations, but during the few weeks of the main run each cannery receives on an average, it is estimated, probably not less than a quarter of a million of salmon. The Sawquai ascends great distances, and the principal spawning grounds are in remote lakes near the head waters of the principal rivers. Most of other British Columbia salmon are content to make a less lengthy and less perilous course, and many, such as the Humpback, appear to resort to the lower tributaries only.

“The Cohoe is a fine fish, but the chief schools enter the rivers so late that until recently they were utilised less for canning than for the frozen fish and fresh fish markets. The flesh is of a fine pink colour, but much paler than the rich orange-fleshed Sawquai. In size they range from ten to twenty pounds, or more, and they continue to enter the rivers until early November.

“The Steelhead, which run late and are caught more or less numerously all through the winter, differ in the most marked manner from all the British Columbia salmon. This fish resembles, in fact, the great sea trout of the Atlantic estuaries with its bright large scales and thick fleshy tail. It is more closely allied to the Eastern and

British salmon than the foregoing species, but it has not proved suitable for canning, on account of the dense character of the bones, and the fact that it ascends from the sea in scattered schools rather than in the compact and dense runs of the Sawquai. For refrigerator purposes this fish could not be excelled, and it has been largely utilised in that way. The average weight of these fish is 12 pounds, but they often reach a weight of 25 or 30 pounds. They are an exception to most of the Pacific salmon, because they afford capital sport with the rod.

"The Dog-salmon, the Tyhee, and other species are too unimportant to require notice.

"The Humpback salmon comes in from the sea in immense schools before the Sawquai run is over, and as they are practically valueless commercially, they are a serious annoyance to the fishermen, who frequently take in the course of a morning 60,000 Humpbacks to 10,000 or 15,000 Sawquai salmon. The name given to this species is due to the fact that soon after the schools enter fresh water the males acquire a peculiar outline, the body deepening enormously, the back rising in the form of a blade-like ridge, and the jaws increasing in length, so that the creature presents a most grotesque and distorted appearance. The flesh is pale, and, unless canned very soon after capture, becomes soft and insipid."

The business of canning salmon is extending along the coast, and is carried on not only on the Fraser, but upon the Naas, Skeena, Rivers Inlet and other rivers. The Fraser river industry is the most extensive. The quantity packed there in the year 1895 was 20,780,171 lbs. The total pack of the whole province was 28,847,101 lbs., and the export value was \$2,884,710. Besides this 1,795,892 lbs. of fresh salmon, in value \$179,589, were exported. The total

yield of the fisheries of the province in 1895 was \$4,423,704 in value.

Concerning the fur-seal fisheries much has been written during the last ten years, and the international disputes between the United States and Russia, and the British and Canadian Governments have brought the subject into disagreeable prominence. The diplomatic literature is enormous in bulk, and in that mass of octavo and folio volumes every actual or probable detail of information, real or imaginary, concerning fur-seals is proved and disproved. Meantime, under international conventions, seals are hunted by British Columbian sailors. The number of vessels employed in 1895 was sixty-four, and the number of skins reported in 1895 was 71,359, amounting in value to \$713,590.

'Agriculture

Although British Columbia will always be thought of first as a country of minerals, lumber, and productive fisheries, it contains many areas of fertile land. These are not like the illimitable prairies of the North-west provinces and Manitoba, nor the broad and level farmlands of Ontario, nor yet like the long river valleys of Quebec, but they are areas scattered over the province, in the deltas of the rivers and the valleys of the lakes and streams, and on the lower terraces of the mountains. Far away north there are rich prairies in the valley of the Peace river, but they will not be brought into requisition for a long time to come. The rivers of British Columbia are not highways of traffic like the rivers of eastern Canada, but communication is by trails and by roads, and access to these northern prairies, therefore, is costly and difficult.

The agricultural areas on the mainland lie chiefly in the southern part of the interior plateau. There the winters are short, and cattle require shelter for a few weeks only. The region is known as the Yale district, and is inclosed approximately by the Canadian Pacific railway to the north and west and the Gold range on the east. The summers are warm enough for the growth of grapes and peaches and all kinds of fruit. The Nicola valley and the Okanagan valley are especially productive tracts, and so also are the valleys of the Similkameen and the Kettle river. A commencement is being made in the Okanagan region with fruit trees and hop vines. All this region, however, is in the dry belt under the lee of the Coast mountains, and irrigation is necessary to make up for the deficient rainfall. The abundance of water at high levels makes irrigation easy and inexpensive.

In the district of Yale also is the bunch-grass country, where horses and cattle find abundant and nutritious food on the slopes and plateaus. The country is open, and the trees are chiefly along the river bottoms or in small clumps. Large ranches have been established with very successful results. The country about Kamloops is specially adapted for ranching. The snowfall is light, and, if the rainfall is deficient, the country is netted with mountain streams.

West of the Coast range all the farming land is on the deltas of the Fraser and other rivers. There the soil is rich, and on the lower reaches of the Fraser there is a large area of productive farm-land. The slopes of the mountains are rough and densely wooded. The opposite conditions exist in this region, for the rainfall is in excess, and the lands must be drained and often dyked.

On Vancouver Island, though it is in the main covered

with thickly forested mountains, there is also much productive farm-land. The land near Victoria is fertile, and on the peninsula of Saanich are many fine farms, as well as at Cowichan and Comox. The land at the head of the Alberni canal is good farm-land; the difficulty here is not so much the quality of the land as the cost of clearing the dense forest and undergrowth. The smaller islands in the Strait of Georgia are, in many cases, occupied by farmers for mixed farming and for sheep ranches.

History

Victoria, the capital city and the first actual settlement in British Columbia, was staked out in 1842, just fifty-five years ago, and, until Captain Cook's arrival upon the coast in 1778, British Columbia was either a blank on the maps, or the space was filled with imaginary details. Even as late as 1811 William Cullen Bryant, in his stately poem, *Thanatopsis*, could find no stronger instance of solitude and remoteness than these mysterious shores—

Take the wings
Of morning, pierce the Barcan wilderness—
Or, lose thyself in the continuous woods
Where rolls the Oregon, and hears no sound
Save its own dashings—yet the dead are there.

It is in the poet's mind the culmination of loneliness, and yet the imagination of sailors and geographers had been busy with it for three hundred years; for there was the termination, on the "Mar del Zur," of the Strait of Anian—the waking dream of Hakluyt and Purchas and Michael Lok and Sir Humphrey Gilbert and Sir Walter Raleigh, and all those other Elizabethan worthies with whom geography was a passion. To them it seemed

contrary to the order of the world that there should be no passage to Cathay through that interminable barrier continent which stretched from the frozen cliffs of *Meta Incognita* on the north to the snow-clad summits of *Tierra del Fuego* on the south, and which still, even at its narrowest point, defeats the utmost efforts of this present age of engineering skill. It was, in effect, the Pacific end of the Strait of Anian that Captain James Cook was sent to discover, and it was the Atlantic end that Parry, last of many other explorers, searched for in 1821 along the western shore of Hudson's Bay. Through all these years faith was kept alive by eagerly accepted stories of passages made, or nearly made; and so this history almost of yesterday, is preceded by an age of fable and romance.

There was after all a great deal of truth in the dreams of these imaginative old sea-dogs. On those far distant coasts there is an abundance of gold and silver wherewith to replenish the exhausted veins of old-world commerce; and the waterways of the "river of Hochelay" and the "*Mer douce*" do open up the way to the great southern ocean. It is really possible to cross the continent by water with but a few short portages. The old canoe route leads to the Athabasca Pass, or to the Peace river, from whence water flowing to the Pacific is not far distant—but the way is long. The Strait of Anian does really exist, but it is far on the north and is ice-bound. That such should be the case was incredible to the old sailors—to use a modern phrase, it was unthinkable. Besides, had not the Portuguese passed safely over the tropics round the Cape of Good Hope? and the sea was not boiling, as the old writers had taught; and Robert Thorne showed to King Henry VIII. that there was no more reason to suppose the sea at the north was impassable for cold than the sea at the south for heat; and

then Christopher Columbus had actually been to Iceland in winter and the sea was not frozen! No wonder, then, that some sanguine sailors thought they had found the long sought strait. Some had met people who had sailed through; and others, finding everybody ready to believe them, boldly affirmed that they themselves had passed through.

In this way it came to pass that even the short history of our most recent province, whose beginnings we ourselves may perchance remember had its mythopoietic age. As for this Strait of Anian, is it not laid down on Jeffrey's standard map of 1768? and it leads from the position of Vancouver into Hudson's Bay; and there, too, we may see the Haro river leading into the "N.E. Tartarean Sea," and the "country of the dwarfs." There, too, is "Fou Sang," discovered by Buddhist monks from China in the year 499, concerning which the curious may consult the Year Books in the Imperial Library at Pekin—and this Fou Sang is no other than our own British Columbia, which, on Jeffrey's map of 1768, guards the western end of the Strait of Anian.

Then Sir Humphrey Gilbert, who was the soul of honour and truth, heard the Mexican friar Urdaneta explain to Sir Henry Sidney how he had passed through the strait, and he saw also the map of the route. Then the pilot Juan Ladrillo had also sailed through it—not to speak of Scolmus the Dane, nor of the East Indians thrown on the coast of Germany; for the particulars of which event the gentle and learned knight refers us to Quintus Curtius and Cornelius Nepos, to Aristotle, Berossus, and the first chapter of Hester, to Arrianus, Philostratus, and Sidrach in his "Discourse of the warres of the king of Bactria." If time presses, the hurried reader may omit these authors and consult Gemma Frisius, and

learn how three brethren sailed westward through this strait, whence it was called *Fretum Trium Fratrum*; and he may look it up on the map, and find that it also comes out near the site of our own Vancouver, which the Canadian Pacific Railway Company founded a few years ago.

But to be more precise, there is Maldonado—Lorenzo Ferrer de Maldonado—an exceedingly circumstantial narrator, who laid before the Council of the Indies a full detailed account of this strait. He sailed in 1588 from Lisbon to Labrador at latitude 60° , thence on a north-west course to 64° , then north to 70° , and then north-west to 75° . At that point the Strait of Labrador turned, and he passed down south-west to the Strait of Anian at 60° ; so again we are brought to British Columbia. This person was a good guesser, for the Fury and Hecla Strait is exactly at 70° , and Melville Sound is at 75° ; and it is just there where Parry would have got through had it not been for the ice.

Then, in 1592, there was Juan de Fuca—a Greek with all the mythopoietic powers of that highly gifted people—a much travelled and much enduring mariner who sailed through from the Pacific to the North Sea, but did not continue farther because of hostile Indians, though he knew the way. His real name was Apostolos Valerianus and he was a pilot well advanced in years. This shifty person made an offer to Michael Lok to pilot the ships of Queen Elizabeth through the strait, if she would make good the sum of 60,000 ducats, of which he had been plundered by the sea-rover, Cavendish, on the coast of Mexico. He too was a good guesser; for he placed the western end of the Strait of Anian at 47° to 48° . His name is perpetuated in the Strait of Juan de Fuca at 48° to 49° ; but no trace of him can be found

in the records of Mexico or Spain. His story, however, did some duty against us in the settlement of the boundary with the United States.

These persons, however, were serious persons compared with Admiral Bartholme de Fuentes. The details of his exploits appeared first in the monthly *Miscellany* for 1708. The narrative was accepted as fact, and on Jeffrey's map are portrayed the geographical results of his expedition. It was accepted also in France by Voltaire, who states in his History of Russia that the Strait had been discovered. J. N. de l'Isle and Buache, the geographer to the king, presented in 1750 a memoir to the Academy of Sciences, "sur les nouvelles découvertes au nord de la mer du sud," with a map which perhaps Jeffrey, the English royal geographer, followed. In this the strait was laid down to Hudson's Bay. The Academy was not deceived, but the voyage and the maps were put in as evidence by the Spanish Government in the Nootka Sound dispute. The real fact is that the story was a pure fabrication by a clever contributor to the magazine. It is necessary to know this story to understand the maps of that period.

It will thus be seen that a very respectable mass of mythology has grown up around the history of our newest province and yet this, as all other mythology, has a certain substratum of fact; for the shortest and most direct way to Cathay and Cambaluc and Mangi and Quinsay is indeed through the great estuary discovered by Cartier to the La Chine of La Salle, and by the Canadian Pacific railway to the Fou Sang of the Buddhist monks at Vancouver—the terminus on the Pacific, of the Strait of Anian; for railways and not sea-ways are the channels of the commerce of the present day.

The real history of British Columbia may be very

shortly told. It commences with the expedition of Captain Cook. The success of Hearne in 1771 in reaching the shore of the Arctic Ocean had awakened public interest, and Cook was sent to the Pacific with instructions to search the whole coast, north of the new Albion of Sir Francis Drake, for a passage eastward to Hudson's Bay. Whether Drake reached 42° , 43° , or 48° is irrelevant here. He did not pass 48° and therefore did not discover British Columbia. Captain Cook commenced at latitude 44° , and coasted to the north, but did not notice the Strait of Juan de Fuca. He discovered Nootka Sound (which he named King George's Sound) on Vancouver Island, and refitted his ships there in the spring of 1778, and then passed up northwards into the Arctic Ocean as far as Icy Cape, where further progress was stopped by the ice pack coming down upon the land. He came to the conclusion that there was no opening westward at a lower latitude than 72° , and returned to Hawaii with the intention of renewing his attempt at a northern passage the following year, but he was unfortunately killed.

Behring, together with his associate Chirikof, had made many discoveries previously. Sailing from Kamskatchka he had discovered the sea and strait which bear his name, and, on his last voyage in 1741, he had passed down the coast of Alaska as far south as 56° ; so that Cook's survey overlapped the Russian discoveries. It was Chirikof who first saw the American continent. He lost some of his men near the present Sitka. Behring, a few days later, struck the land at Mount St. Elias. It is also more than probable that Juan Perez, a Spaniard, commanding an expedition from San Blas in Mexico, saw this part of the coast four years before Cook; but the discovery was kept secret until many years later. The history of the province commences, then, with Cook's visit in 1778.

Captain Cook was killed, and his successor, Captain Clerke, died, and Captain King, upon whom devolved the command, touched at Petropaulovski on his return voyage; and his visit waked up the Russian fur-merchants to organise a Russian fur company in 1783, which established trading posts in Alaska. The news spread in the east, and some English merchants in China fitted out a small trading vessel under Captain Hanna in 1784, and thus commenced the direct trade in furs with China; for there was a great demand for sea-otter skins among the wealthy Chinese, and enormous prices were readily paid for them.

In those days every British vessel trading in the Pacific round Cape Horn required a license from the South Sea Company, and every vessel trading east of the Cape of Good Hope required one from the East India Company. In 1785 a company under a license from the South Sea Company was organised in London to take up this fur trade at Nootka Sound. It was called the King George's Sound Company, and sent out two vessels under Captains Portlock and Dixon. Before they arrived, however, vessels commanded by Englishmen, and sailing under the Portuguese flag and the flag of the East India Company, were trading on the coast. In that way Meares and Tippet and Strange and Duncan and Colnett carried on their operations; and Barclay, who sailed under the flag of the Austrian East India Company. These officers made minor discoveries as they traded along the coasts, and many places still bear their names, though Nootka Sound, as it soon was exclusively called, became the general centre of the trade. Boston, then the chief port of the United States, and renowned for the enterprise of its merchants, aspired also to a share in so profitable a business and the *Columbia* Captain Kendrick and the

Washington Captain Gray arrived in those seas in 1788, and found Meares at Nootka building a ship and a trading-house.

Spain, which for centuries had been asleep on the shores of the Pacific, at last heard of these doings in what she conceived to be her territory; for she claimed up to latitude 61° , where the Russian discoveries were supposed to end, and in 1789 two Spanish ships of war arrived at Nootka Sound and seized Captain Meares's two vessels and his house and establishment. This brought England and Spain to the brink of war. The matter was, however, settled by a treaty called the Convention of the Escorial, with the result that Meares was to be reinstated and reparation made; it was to carry out this convention and reinstate Meares that Captain Vancouver was sent out in 1791. The Spanish officers made difficulties, and Lieutenant Broughton was sent home for further instructions, while Vancouver went on with a survey of the coast so thorough and so accurate as to be available to the present day. Eventually in 1795 the Spanish flag was struck and the Union Jack hoisted, and British Columbia became an acknowledged possession of the Crown of Great Britain.

While these events were taking place upon the coast the merchants of Montreal, known as the North-west Company, began to occupy the country. Alexander Mackenzie crossed the Rocky Mountains in 1793, and following in his wake came the fearless and hardy traders who had already spread over the western and northern plains. Their names are written all over the map of the province, and the enterprise and pluck of Simon Fraser, David Thompson, John Stuart, Jules Maurice Quesnel, John M'Leod, Robert Campbell, and other men of similar stamp, are worthily commemorated in the names of the

great natural features of the country they gave to the British Crown.

Scarcely had the Nootka Sound dispute been settled when the United States laid claim to the whole country and the Oregon difficulty began to drag its wearisome length over fifty years of controversy until the cry of "54° 40' or fight" began to be heard. On the other hand, Great Britain claimed the whole valley of the Columbia. Fortunately, the issue is now dead, but there are one or two points still of interest. It has been stated that two Boston vessels arrived on the coast in 1788—the *Columbia* and the *Washington*; one gave its name to the territory and the other to the chief river, long known as the Oregon or "The great river of the west." The estuary of this river had been discovered by the Spaniard, Heceta, in 1775, Meares in 1788 had entered it hoping to find a harbour, but seeing a wall of breakers across it, he made no further search, and recorded his rebuff by calling the headland Cape Disappointment, and the bay Deception Bay.

Vancouver also sailed past it, noting the fresh water and the breakers. The first vessel to pass the line of breakers was the *Columbia*, commanded by Captain Robert Gray, and he went about 12 or 15 miles up. The same year one of Vancouver's ships, commanded by Lieutenant Broughton, entered the river and sailed up for 120 miles, and took formal possession of the country in the name of the king. He went as far as the site where the Hudson's Bay Company afterwards built Fort Vancouver. The first white man to see the upper Columbia above the site of Fort Colville was David Thompson, who, after having established, in 1808, Fort Kootenay at its source, descended the river in 1811 to its mouth. In 1805 Lewis' and Clarke's expedition

reached the mouth of the Columbia—in 1808 the Russians founded a settlement soon after abandoned, and in 1811 John Jacob Astor founded Astoria, which two years later, on account of the war of 1812-14, he sold to the Canadian North-west Company with all its stores, buildings, and stock. That closed the first chapter of the history of the province.

The second chapter is the history of the operations of the great fur company in what was called the western department. After years of rivalry and private war the North-west Company of Montreal united with the Hudson's Bay Company in 1821, and the British Government granted for twenty-one years to the ancient company, now reinvigorated with the new blood of the Montreal company, an exclusive license of trade over all the Indian territory not covered by the Hudson's Bay charter. The country west of the mountains was left open to trade under a convention with the United States to the subjects of all nations without prejudice to the territorial claims in dispute; but the whole trade fell naturally into the hands of the Hudson's Bay Company. Private traders from the United States could not compete with this powerful organisation managed by capable men resident in the territory, and they were, moreover, always liable to be plundered or murdered by the Indians. The British Government conceded to the company, as against all other British subjects, the exclusive right to trade in the territory west of the mountains. The concession was renewed in 1838 for another period of twenty-one years.

Under these arrangements the Hudson's Bay Company ruled this immense territory with a beneficent despotism. It was not in their interest to promote settlement, and they discouraged it; but they excluded intoxicating

liquors, dealt fairly and justly with the natives, and indirectly prevented the extermination of fur-bearing animals. They established on the Columbia farms for the supplies of their own servants, and they had posts over the country, of which the chief were Fort Alexandria on the Fraser, Fort Thompson at Kamloops, the posts on Fraser's, Babine, and M'Leod's lakes, and Fort St. James on Stuart's Lake. The chief post of the whole system west of the mountains was at Fort Vancouver on the Columbia. They won the confidence of the Indians, and by justice, tact, and courage prevented the internecine struggles, between the white and Indian races, which broke out south of the boundary line. Such a system, however, could only be one of transition; but, for the time and under the circumstances, the autocratic government of the company was of the greatest advantage, not only to the natives, but to the British Government. If it was also of commercial benefit to themselves, it was well merited.

In 1842 the third chapter of the history opened, for the boundary question was once more in warm discussion, and it became necessary for the company to prepare to withdraw from Fort Vancouver, and transfer their headquarters to some suitable point within unquestioned British territory. James Douglas, the chief factor, erected Fort Camosun, now Victoria, on Vancouver Island. No white settlement existed then on the whole island, nor, in fact, on the mainland either—then called New Caledonia. Work was commenced in March, 1843, and during the summer the requisite buildings were erected and inclosed by a bastioned stockade. During 1844 the establishment was completed; the first ship direct from England arrived in 1845. In 1846 the Oregon treaty was passed, settling the boundary along

latitude 49° and the centre of the Strait of Juan de Fuca; and in 1859 the Hudson's Bay Company abandoned Vancouver for the new post of Victoria. Then came the gold discoveries in California, and the stream of settlers into Oregon. The old times had passed, and the new era of settlement was to commence.

The British Government first began to colonise through the Hudson's Bay Company, and in 1849 it made a grant to the company of the whole of Vancouver Island, under conditions of settlement, and sent out a royal governor—with a commission and a promise of 1000 acres of land, but without a salary. The situation was an impossible one. The real governor could be none other than the chief factor of the grantees of the island, and the superior officer of all the settlers but eight, who had been brought out by Captain Grant. The nominal governor resigned, and, in 1851, Chief Factor Douglas was appointed in his place, and with a salary of £800 sterling, apart from his salary as an officer of the company. He had seen too much land to care especially for 1000 acres of it.

Governor Douglas was eminently qualified to be a pioneer governor. The colony and the British owe much to him. He was a man of courage and experience, and he had great tact and organising capacity. In quick succession followed the usual sequences of colonial history—the council, the justices, the petition to the Crown; and at last, in 1856, the first legislative body elected by the people. There were not many electors, but the system was complete; and Governor Douglas delivered the first speech from the throne heard in that wilderness of "continuous woods."

The dispersion of nations, which on the plains of Babylon had to be accomplished by the confusion of

tongues, is in these latter days effected by the discovery of gold; and the discoveries on the Fraser river drew a great influx of people into the wilderness of forest and mountain in the summer of 1858. They came in singly and in parties as the news spread—rough and lawless miners, for the most part an overflow from California, and many of them driven out by the strict rule of the vigilance committee; but in the English colony they found the force of law and order too strong, and the worst of them left in disgust. The increasing population consequent on the discoveries of gold stirred up the Imperial Government to unwonted promptness; and the trading privileges of the Hudson's Bay Company were cancelled, the mainland was erected into a colony, and Mr. Douglas was made governor of it also, in addition to his position as governor of Vancouver Island. He was, however, required to retire from all connection with the Hudson's Bay Company, and dispose of his interest therein. On 19th November, 1858, he assumed the duties of governor.

Governor Douglas soon had occasion for all his tact and patience. The treaty of 1846 had provided that the boundary line should run "through the middle of the channel which separates the continent from Vancouver Island." Now there is an archipelago at the southern end of the Strait of Georgia on the parallel of 49° ; there are, therefore, many channels, and among them are three principal ones. Of these three, one was called from its position the middle channel, and still retains the name. The Hudson's Bay Company had established a large farm on the island of St. Juan on the British side of this middle channel, as they naturally supposed it to be. In 1854 a collector of taxes from the neighbouring territory of the United States visited the island, levied taxes on the

farm, and seized and sold stock to pay the taxes so assessed. The company made a claim for loss and damages, and the matter went into the arena of diplomatic correspondence. In the meanwhile the disappointed ones among the miners began to find their way back, and between twenty and thirty had squatted on the island, and one of them shot a pig belonging to the resident factor of the Hudson's Bay Company. This apparently trivial incident brought the two countries to the brink of war. The twenty-two American citizens appealed for protection "in their exposed and defenceless position"—exposed to the attacks of outrageous pigs and wild Indians, as well as to the dangers from eighteen servants of the Hudson's Bay Company resident on the island. In response, the general commanding on the Pacific occupied the island with United States troops, without consulting the authorities at Washington or communicating with the government of the province.

It is useful to recall this absurd occurrence, because it will show how easily a few hotheads may begin a war involving the destruction of millions of property and the loss of numberless lives. The tact and patience of the Governor and of the commanders of the British war-vessels barely availed to prevent collision before the matter was even reported to the United States Government. Fortunately General Scott was commander-in-chief—a soldier who had seen much of war; and, when the facts were known, the belligerent officers were removed to other fields of usefulness, and a joint occupancy was established, and continued with peace and good feeling until the question was determined. Much money was expended in the movements of troops and war-ships, and much labour in diplomacy—but the pig was never paid for.

The capital city of the new province was located

at the mouth of the Fraser, and, under the direction of Colonel Moody, a detachment of Royal Engineers surveyed the site. Queensborough was the name first selected—afterward changed to New Westminster. The province had, of course, its legislative council, after the usual pattern of a colony in transition, and it soon commenced to petition for a resident governor.

Governor Douglas retired at the close of his term of service, and was knighted. Governors were then appointed to each colony, but it soon became evident that a union was in the interest of both provinces, and this was effected in 1866 by a general popular movement in despite of the opposition of a minority. The province of Vancouver Island was merged with that on the mainland under the general name of British Columbia.

In the year 1867 and 1868 the extreme isolation of the province became the subject of discussion, both in British Columbia and in England. The colony began surveys for a road to connect with Canada, and meetings of influential citizens were held in favour of union with the Dominion of Canada. The movement was warmly approved by the Imperial Government, and was met cordially by the Dominion Government. The terms of union included provision for the construction of a railway to connect the system of Canada with the Pacific seaboard. In 1870 the proposal was drawn up at Ottawa with the assistance of delegates from the Pacific province. The following year it was accepted, and the union was consummated in the same year by an act of the Imperial Parliament. Thenceforward the history of the province is merged in that of the Dominion.

Cities

Seeing that the province has been discovered very little more than a hundred years ago, it cannot be expected to contain large cities: Victoria, the capital of British Columbia, possesses, however, many natural advantages. The foundation of the city and the choice of its first name, Fort Camosun, have already been noted. For a short time it was called Fort Albert, but the eventual selection of the name "Victoria" was a happy inspiration, since not only in climate but in surroundings of mountain and sea, her gracious Majesty would find, if it were only possible for her to visit her island city on the great South Sea, all the natural charms of her summer and winter homes in the central island of her empire. They are, however, drawn here to a larger scale. The mountains around Balmoral are surpassed by the lofty summits which encircle the horizon at Victoria, and the Straits of Juan de Fuca and of Georgia reproduce the Solent in grander proportions; for in their deep and sheltered waters all the navy of England might manoeuvre, without inconvenience, in review before their sovereign.

The city of Victoria is situated on the eastern side of a narrow inlet opening from the Strait of Juan de Fuca, upon gently rising ground and facing to the south and west. The inner harbour is sufficiently deep for vessels drawing 16 feet; and at the wharfs of the outer harbour, vessels of any size find accommodation. The harbour of Esquimalt, only 3 miles distant and connected by electric railway, is the station of the Royal Navy on the Pacific, and in its spacious shelter there is anchorage for the largest ships afloat.

The population of the city proper increased from

5925 in 1881 to 16,841 in 1891, and it is now estimated at close upon 25,000. For electoral purposes it is grouped with the adjacent districts of Metchosin and Esquimalt, and returns two members to the Dominion



ESQUIMALT HARBOUR.

Notman, Photo.

Parliament. Its importance as a naval station, from the proximity of the coal mines of Nanaimo, has always obtained for the city much consideration in England. Only there and at Halifax on the Atlantic are Imperial troops still to be seen; and the fortifications being erected to protect Esquimalt are a sequel to the fortifications guarding the Imperial dock at Halifax on the Atlantic. The Pacific city, far off though it be, has an English air, due to the large proportion of settlers direct from Great Britain, to the nautical proclivities of the people, and to the continued presence of British ships of

war in its waters. There is also an old-world appearance about it, from the different nationalities represented in its population, not only European, but Asiatic ; for there are many Chinese and Japanese drawn thither by its commercial connections.

When Vancouver Island was united politically with the mainland to form the present province of British Columbia, Victoria was made the capital, and a pile of very imposing buildings has lately been built to accommodate the legislature and the departments of the provincial government. There is only one legislative chamber, and that is elected direct by the people upon what is in effect manhood suffrage. It consists now of thirty-three members, from whom an executive council of five is selected in the usual way. The Governor, who is appointed by the Dominion, resides at Victoria. The city is well built, with good shops and handsome private residences. The streets are well kept, lighted by electric light, and many are planted with shade trees, and the suburban roads are well cared for. A fine park affords beautiful drives and very grand scenery. Across the water to the east and south are the mountains of the Coast range, and the snowy peaks of the Olympian range; and in the rear, to the west and north, are the mountains of the Island range.

Victoria is the centre of a large business, not only in shipping but of general supply. There is a large Chinese colony resident in a quarter of its own, and there are many Japanese also ; for in the Pacific, China and Japan count for a great deal in trade, though, as these Asiatics, whether British subjects or not, have no votes, they do not count in the government of the country. It is the centre of the fur-sealing fleet, and the point of departure for many lines of steamships. The chief details and

figures are given below in tabular form, and it will be sufficient to remark here that it is not only the third port in the Dominion, as the tables show, but it is the chief port in the North Pacific after San Francisco. The dock at Esquimalt adds greatly to its importance, and there is also in connection with it a marine railway, which can draw out of the water in a short time vessels 320 feet long and of 22 feet draught.

NEW WESTMINSTER

In point of age this is the second city of the province. It was founded by Colonel Moody in 1858 at the outbreak of the gold fever, and it was the capital of the mainland before the union. In 1881 the population was 1500. In 1891 it had increased to 6641, and at the present time it is probably 8000.

The city is situated on a rising ground on the north bank of the delta of the Fraser, 15 miles from the mouth of the river. The low lands at the delta are the largest single tract of farming land in the province, and are very productive. The city, however, depends chiefly on lumber and on the salmon canning industry for its trade. The chief saw-mills of the province are here, and the salmon-runs up the Fraser river are incredible to all who have not seen them with their own eyes. It has a good harbour and a large shipping trade.

VANCOUVER

This infant city, the child of the Canadian Pacific railway, does not appear in the census of 1881; for it was then in forest—the site only of prodigious Douglas firs. In 1891 the population was 13,685, and is now

probably nearly 20,000. It is situated on a peninsula on the south shore of Burrard Inlet on ground 200 feet high sloping down to the sea. Burrard Inlet is one of



PART OF THE TRUNK OF ONE OF THE MAMMOTH TREES IN STANLEY PARK,
VANCOUVER.

the deep fiords previously described, and is one of the best harbours on the Pacific. It is half a mile wide at its mouth, and opens out to two miles in front of the

city. The inlet extends twelve miles into the country, and is everywhere from 6 to 20 fathoms deep with excellent anchorage. It is very easily accessible to the largest ships, and is open all the year round.

Vancouver is connected with New Westminster by electric railway, and by steamers daily with Victoria, 90 miles distant. Shortly after its foundation it was destroyed by fire, but has been rebuilt in solid and substantial manner. It is lighted by electricity, and possesses all the conveniences of cities many times its size. Chief among the hotels is that of the Canadian Pacific railway, which cost \$250,000. The principal park is Stanley Park, and some of the gigantic Douglas firs are left standing there for the inspection of travellers.

The other chief towns in British Columbia are Nanaimo, the centre of the coaling trade, and Kamloops in the interior plateau. Barkerville is a small town, the centre of the Cariboo district, but in the Kootenay district large towns have sprung up almost in the last eighteen months. Rossland has 7000 inhabitants, and Trail 1500. In the Slocan district are Kaslo and Sandon, mining towns, and Nelson the official centre. These towns grow week by week, and the spring of 1897 will witness an influx hard to estimate beforehand. The leading banks of the Dominion have agencies in these towns, and civil order is as perfect as in any town in England.

Communication

The great avenue of communication by land is the Canadian Pacific railway. The main line is 519 miles long within the province, and it opens up all the southern territory. At Revelstoke a branch leads south to the head of the Arrow Lakes and, by means of well-

appointed steamers and short connecting links of railway, the Columbia and Kootenay valleys are opened up throughout, and connection is made with Spokane on the Northern Pacific railway and all the system of United States railways. The Columbia river is navigated all winter, and although ice sometimes forms, the steamers of the Canadian Pacific Company never intermit their trips from Arrowhead. At Sicamous a branch leads to the head of Okanagan Lake, and connects with steamers plying upon the whole length of the lake. At Mission Junction the most important southern connection is made for Seattle, Tacoma, and San Francisco, and opening up the transcontinental systems of the Northern Pacific and Union Pacific routes. Eighteen miles east of Vancouver a short branch leads to New Westminster, at the mouth of the Fraser. All these communications are to the south of the Canadian Pacific railway. The region to the north has to be reached by stages from Ashcroft, which is the avenue to the Cariboo country, or from Kamloops and a few other points. There are good farms at intervals along the road, and at Chilcoten and Quesnel; but travelling through the north country is still chiefly along the trails. There are few settlers, and in that remote region, miners, prospectors, and explorers are the only travellers. On Vancouver Island there is a railway from Esquimalt to Nanaimo, 78 miles long, connecting with the coal mines, and one from Victoria to Sidney, 16 miles long, opening up some good farming country.

It is by sea that the communications of the province are so important and far reaching, for they stretch out over the whole Pacific Ocean to China, Japan, and Australasia, as well as to San Francisco and the other United States ports to the south. Some of the chief

steamship lines are enumerated to show how the tonnage of these Pacific ports has attained such high figures. The magnificent steamships of the Canadian Pacific line sail from Vancouver and Victoria for Yokohama and Shanghai, and those of the Australian line sail for Sydney, N.S.W., touching at Honolulu and Fiji. By these the most direct communication is made with all points in eastern Asia and Australasia. The Pacific coast steamship line touches at all the ports on the west coast from San Francisco on the south to Sitka in Alaska. The Canadian Pacific Navigation Company's line keeps up communication with all the ports of the province—Victoria, New Westminster, Vancouver, Port Simpson, Alberni, and the Queen Charlotte Islands. This is a far-reaching system of connections, and there are from Victoria and New Westminster many routes to nearer ports.

Commerce

The trade and navigation returns of the Dominion presented to Parliament in March, 1897, give the following results of the trade of the province for the last fiscal year to June 30, 1896.

Statement of arrivals of sea-going vessels for the year ending June 30, 1896 :—

	Vessels.	Tons.
Pacific ports—British Columbia— open all the year round.		
Comox	81	121,788
Nanaimo	369	265,270
Vancouver	364	337,131
Victoria	1386	929,669

Summary of the foreign trade of British Columbia for the year ending June 30, 1896 :—

Total imports	\$5,496,944
Total exports	10,576,551

CHIEF EXPORTS

Products of the mine	\$5,762,960
„ „ fisheries	3,288,776
„ „ forest	685,740
Animals and their products	434,647

Education

The government of the province is alive to the paramount importance of providing schools for the rising generation, and beside the vote taken for school buildings one-sixth of the revenue is devoted to education. The schools are free, and wherever there are ten scholars the government will provide a certificated teacher. In 1893 there were 149 schools, and an attendance of 10,773 children—about one-sixth of the entire white population.

NOTE TO CHAPTER XV

The following publications may be referred to for further details on the subject of this chapter:—

Annual Reports of the British Columbia Board of Trade. Victoria, B.C.

Annual Reports of the Minister of Mines. Victoria, B.C.

BANCROFT, H. H.

History of the North-west Coast, vol. i. San Francisco, 1884.

BEGG, ALEX.

History of British Columbia. Toronto, 1894.

British Columbia, its present resources and future possibilities. Published by the Provincial Government, Victoria, 1893.

Bulletins of the provincial Mineralogist, William A. Carlyle, Victoria.

GREENHOW, ROBERT.

History of Oregon and California, and other Territories on the North-west Coast of North America. Boston, 1845.

TWISS TRAVERS.

The Oregon Question examined. London, 1846.

The following are the reports of the Geological and Natural History Survey with their dates :—

VANCOUVER ISLAND.

J. Richardson, 1872-73, 1874-75, 1877. G. M. Dawson, 1877, 1886.
Prof. Macoun, 1876.

QUEEN CHARLOTTE ISLAND.

J. Richardson, 1873. G. M. Dawson, 1879.

COAST AND MAINLAND.

Dr. Selwyn 1872-76. J. Richardson, 1875-77. G. M. Dawson, 1876-77, 1878, 1880, 1886-89, 1891-94. Prof. Macoun, 1876.
H. Bauerman, 1884. A. Bowman, 1888. J. McEvoy, 1893-94. R. G. McConnell, 1894. Survey Reports, 1895 and 1896.

ROCKY MOUNTAINS.

Dr. Selwyn, 1876. Prof. Macoun, 1876. G. M. Dawson, 1880, 1885. R. G. McConnell, 1886, 1893-94.

CHAPTER XVI

THE MACKENZIE RIVER BASIN

NEXT to the Mississippi the Mackenzie is the largest river in North America. It drains an area of 677,000 square miles, and it flows through nearly 17 degrees of latitude in a course, from its ultimate source, of nearly 2500 miles. Its sources, on the south, are the head waters of the Athabasca, which originate on the eastern slopes of the Rocky Mountains, in the Yellow-head and Athabasca passes. Its waters, in the Athabasca Pass, rise close to waters flowing into the Columbia, at the Boat Encampment. The sources of the Peace river, one of its great tributaries, almost touch those of the Fraser; and the source of another great tributary, the Liard, is within a few miles of the source of the Yukon. On the east it receives the waters gathered up in the Athabasca, Great Slave, and Great Bear lakes, and it is separated from the basins of the Churchill and Saskatchewan by narrow and low water-partings. It rises in the south at lat. $52^{\circ} 20'$, and it falls into the Arctic Ocean in lat. 69° . In its northern course it is known first as the Athabasca; from Lake Athabasca to Great Slave Lake it is the Slave river, and from Great Slave Lake to the sea it is called the Mackenzie, and is continuously navigable by steamers to the sea for a distance of 1120 miles. The

Mackenzie river is nowhere less than half a mile wide; where the Liard falls in it is a mile and a quarter wide, and in its widest part it expands to three and four miles. It is nowhere less than 7 or 8 feet deep in its length of over 1000 miles from Great Slave Lake to the sea.

The valley of the Mackenzie is an alluvial plain bounded on the east by a more or less wooded region sloping down to the Barren Grounds and drained by the Coppermine and Great Fish rivers falling into the Arctic Ocean and, south of them, by the Doobaunt and by the Churchill with its extensive tributary system flowing into Hudson's Bay; on the west, it is bounded by the Rocky Mountains, and on the south by the water-parting of the North Saskatchewan. The territory of Athabasca, which was reserved from the chapter on the other north-west territories, forms the southern part of the Mackenzie basin, and is more naturally considered in this chapter than with the territories of the Winnipeg sub-basin. The Mackenzie has the drawback, in common with all rivers flowing north in these latitudes, that the upper waters thaw in spring before the lower reaches of the river are clear of ice. This is the frequent cause of floods, which, with the action of the ice, erode the banks where the rocks are soft, and carry down to the sea trees and other waste of the land to increase the area of the delta at its mouth.

Geology

The valley of the Mackenzie is a continuation to the Arctic Ocean of that great interior plain which has already been described. The line of crystalline rocks, on its eastern border, starts from the western end of Lake Athabasca, and follows along the bank of the Slave river to Fort Resolution, midway on the southern shore of

Great Slave Lake. Crossing the centre of the lake, these rocks leave the Mackenzie far on the west, and are seen no more on its banks. The river issues from the western end of Great Slave Lake, and inclines more to the westwards; while the line of Laurentian rocks passes directly north, touches the extreme east of Great Bear Lake, and stretches north to the Devonian of the Arctic coast. The territory known as Athabasca is underlaid by the Cretaceous formation, but towards the north the Devonian closes in from both sides, and narrows the Cretaceous area, so that in places it barely keeps possession of the river banks, while in other places it disappears and leaves the Devonian rocks exposed. From Fort Good Hope it spreads out, gradually widening to the sea.

It will appear then, that, speaking generally, the same geological conditions exist as on the plains to the south. The soil is deep and well suited to the growth of crops wherever the climate permits, but as the region is, for the most part, covered with forest, it requires to be cleared and the lower land drained to prepare it for cultivation. The elevation of the valley is very slight. Lake Athabasca is 690 feet, Great Slave Lake is 391 feet, Fort Simpson is 241 feet, and Fort Norman is 150 feet above the sea.

Athabasca Territory

The boundary of Athabasca at the south is, at present, precisely the northern boundary of Alberta. Its western boundary is the meridian of 120° W. which divides it from British Columbia. On the north it is bounded by a survey line coinciding, within a few miles, with the parallel of 60° north latitude. The boundary on the east is the northward prolongation of the boundary between Alberta and Saskatchewan (about $111^{\circ} 30'$ west longitude)

until it strikes the Athabasca river (which it does very nearly at Fort M'Murray at the junction of the Clearwater), thence it follows the Athabasca and Slave rivers to the northern boundary. An Order in Council has been passed to extend the eastern boundary to the meridian of 100° W., but the final statutory action has not yet been taken. The territory as now existing covers an area of about 122,000 square miles.

The water-parting between the Mackenzie and the North Saskatchewan runs diagonally to the south-west from the north-east corner of Alberta, and thus one-third of the territory of Alberta is drained northwards by the head streams of the Athabasca and Peace rivers. These two rivers, however, flow for the most part of their courses in the territory of Athabasca and form its main features; for all practical purposes it may be said that the territory of Athabasca is the Mackenzie basin as far as lat. 60° .

Contour of the Land

The territory is, for the most part, an undulating plain. Immediately south and west of Lake Athabasca the large rivers flow in and out of the lake through wide deltas, and form a very low alluvial tract, often flooded by the rise of the rivers. Throughout the southern part, between the Peace and Athabasca rivers, it is a rolling plain thickly wooded and studded with numerous shallow lakes which, as they fill up with moss, become muskegs and marshes. Everywhere the rivers have cut deep valleys through the soft rocks. There are some ridges of higher elevation. The Birch mountains are a range or plateau 1000 feet above the plain, or 2300 feet above sea-level, extending for 100 miles between the lower reaches of the Peace and Athabasca rivers. The Buffalo

Head hills, about 40 miles south of Fort Vermilion, on the Peace river, is a plateau elevated 1000 feet above the plain, and about 50 miles long by 25 miles wide. The hills near Lesser Slave Lake are the same height, and there are other detached ridges of similar elevation. The main chain of the Rocky Mountains does not enter Athabasca. Lesser Slave Lake is 1890 feet above the sea, and the land falls with a gradual descent to the head of Athabasca Lake. North of Peace river the land is higher and has more of the character of a plateau.

Hydrography

The Athabasca, on the eastern and southern edge of the district, and the Peace, flowing diagonally through it from south-west to north-east, with their tributaries, make a network of streams over the territory, and these open out into lakes of all sizes, for the most part shallow. The largest is Lesser Slave Lake, 61 miles long, with an average width of 8 miles, draining by the Lesser Slave into the Athabasca river. It covers an area of 484 square miles, and is seldom more than ten feet deep. The Wabiscaw river and lakes, draining northwards into the Peace, collect the water of the south-east corner of the territory, and in the north-west the Hay river, a tributary of Great Slave Lake, takes its rise.

The Peace river is a stream remarkable for many reasons, and especially because, taking its rise far within British Columbia and on the west of the Rocky Mountains, it flows eastwards, with a breadth of 300 to 500 yards, through that range by the lowest and most practicable pass,—a veritable gateway of nature, a valley a mile wide between mountains rising 2000 to 4500 feet above it, or 4000 to 6500 feet above sea-level,—through which,

as seems fitting, Alexander Mackenzie first crossed to the Pacific. The Peace river is 905 miles long from the rise of one of its chief tributaries in Summit Lake, at the crown of the Pacific-Arctic water-parting. There is a portage road there only $7\frac{1}{2}$ miles long to the Fraser. It is there called the Parsnip river, and, flowing northward, meets the Finlay river at the "Forks." The Finlay is 310 miles long. It is the larger stream, and the true Peace river. Its head-waters interlock with the sources of the Liard and of the Skeena and Stikine rivers. Calculated from its farthest source, the Peace is 1067 miles long. From the Forks it is called the Peace river, and flows in a general eastward direction for 757 miles to its discharge into Lake Athabasca. It is remarkable, also, because it flows through a rich agricultural country, and with a quiet, untroubled current, navigable up to Rocky Mountain Cañon beyond Dunvegan, save for one short break of two miles; this is at the Vermilion Falls, 220 miles from its mouth, where the river, at that point a mile wide, falls over a low limestone ledge in a drop of ten to fifteen feet at lowest water, but at high water the fall becomes much less. In its upper course the Peace flows through a broad valley 600 feet below the general surface of the country, but in its lower stretches the valley almost disappears.

The Athabasca (often called in old maps the Elk) river, is considered to be the upper Mackenzie on account mainly of its general direction from its source. It is 776 miles long—not so long as the Peace. Like the Peace, it flows in a valley cut deeply into the surface. In its upper course the valley is over 300 feet deep and two miles wide. For the first sixty miles it flows through the mountains, through a heavily wooded country. Many mountain streams contribute to swell its volume, among

which are the M'Leod and the Pembina. This latter stream skirts the water-parting of the North Saskatchewan, and at the Roman Catholic Mission of Lake St. Anne the two streams approach very closely. Below the Pembina the Lesser Slave river brings in the waters of Lesser Slave Lake, and the Athabasca then becomes navigable by stern-wheel steamers drawing $2\frac{1}{2}$ to 3 feet of water.

Athabasca Landing is an important point on the great bend of the river, where it assumes its direct northerly course; and this is, at the present day, the entrance to the Mackenzie basin; for there the road, 90 miles long, from Edmonton is connected by rail with Calgary. It is a Hudson's Bay post and a busy station, as all supplies for the great north land pass through there. The steamer *Athabasca* plies throughout the stretch of navigable water accessible from this point. There are 166 miles to Grand Rapids, on the north and east, of unimpeded navigation. Up to Grand Rapids the river is from 250 to 400 yards wide, and flows in a valley from 300 to 400 feet below the general level of the plain.

At Grand Rapids commences a series of rapids and falls which render the river unnavigable for about 85 miles to Fort M'Murray, in which distance the river drops 360 feet, running between sandstone cliffs of a general height varying from 200 to 300 feet, and in one place 500 to 600 feet high.

Fort M'Murray is another important point in the Mackenzie valley, for it is not only the head of a long stretch of steamboat navigation, but it is at the junction of the Clearwater river, the main avenue of the canoe navigation of former days. Up the Clearwater is the Methy portage, $12\frac{1}{4}$ miles across to the Churchill, and down the Churchill is the Frog portage, 380 yards, to

waters falling into the North Saskatchewan. In the old fur-trading days, when the brigades of voyageurs met on these key portages of the great western wilderness, and the wild scenery was lit up by the great camp fires, the arduous labours of the day were often forgotten in the merriment of the re-union of acquaintances; for, to be a voyageur, a cheerful disposition was the prime requisite, and a good canoe man had usually a good store of voyageur songs, and, whenever he had an opportunity, could show very wonderful steps in dancing.

Fort M'Murray is the starting-point of the steamer *Grahame*, and navigable waters, 717 miles in aggregate length, are available from thence. There is a stretch of water to Fort Chipewyan on Lake Athabasca, 200 miles, and from thence to Fort Smith on the Slave river, 102 miles long. In addition, the Peace river is navigable for 220 miles as far as Vermilion Falls, and Athabasca Lake is 195 miles long; there are besides 40 miles of navigable water on the Clearwater. From Fort M'Murray the banks of the river continually decrease in height, until, at Lake Athabasca, they are only 3 feet high. The river expands to a width of from 400 to 800 yards, and deepens to permit of vessels drawing from 7 to 8 feet of water. The current runs steadily at about four miles an hour. The country is all level alluvial land, well wooded, and the soil is good, but there is much swampy land. It is a loamy clay suited for agriculture as far as Fort Chipewyan, where the hard Archæan rocks come out upon the right bank. As the river approaches the lake, it divides into many arms, embracing low marshy islands, and forming a wide delta of low land. It falls in at the extreme western end of the lake, and there also is the outflow of the Slave river; and, at a short distance down, the flood of the Peace river joins the

Slave river, and the water flows into or out of the lake, according to the varying conditions of the seasons, through an extensive maze of lakes and channels.

Lake Athabasca is 690 feet above the sea. According to the recent survey of Messrs. Tyrrell and Dowling, published in 1897, it is 195 miles long; its breadth varies from 5 to 35 miles, and it covers an area of 2850 miles. At the west end it is shallow, but it is deep elsewhere, and it is navigable in its whole extent. The soil around it is generally rocky, and unfit for agriculture. On the north shore the Laurentian rocks come to the surface, and on the south shore are hard non-fossiliferous sandstones. Some land, however, near the fort has been cleared, and wheat, as well as all garden crops have been raised with success.

Fort Chipewyan is on the north side of the lake, near its outlet, and is built on bare Laurentian rock. This post, before and after its removal from the south shore, has always been a central and a favourite spot in the wilderness, and in the old days the chief traders who sojourned there took trouble to supply it with books and other things of the same nature to lend a little of the refinement of civilisation to this distant wilderness home. There is no want of food, for the lake abounds in fish and the country with game. In the fall of 1888, it is recorded by Mr. Ogilvie that the Hudson's Bay people required 36,000 whitefish for winter use, the Roman Catholic Mission required 12,000 and the other residents required 30,000. He reports that nearly all of these were caught during the three weeks he was there. From 30,000 to 40,000 wild geese are killed every fall for winter use.

Resources

Although the northern boundary of the territory reaches to Fort Smith on Slave river, at lat. 60° , it will be convenient to pause here and consider the resources of this immense but little known territory, and here also is a point of physical change; for northward beyond the valley of the Peace river very little can be said of agriculture, and if the growth of crops and vegetables round the more northern Hudson's Bay posts is referred to, it is chiefly intended as an indication of climate.

The larger part of the territory of Athabasca is underlaid by Cretaceous rocks. At Isle à la Biche, 20 miles above Fort M'Murray, Devonian limestones first appear on the Athabasca, and they are seen on both sides of the river, at the base of the bluffs on the banks, down to Lake Athabasca. From Isle à la Biche the river begins to pass between banks of sand impregnated and consolidated by tar or pitch supposed to have originated in the Devonian limestone below. The tar exists in such quantity that it is drawn out by the sun and flows down the banks in viscous streams, forming pools of tar and tar wells 11 or 12 feet deep, whence it may be ladled up for tarring boats or roofs of buildings. These tar sands are 150 to 200 feet thick, and they extend at intervals for 53 miles below Fort M'Murray, or through a total distance of 73 miles. Similar tar springs are met with in places far down the Mackenzie, almost to the sea, and on the shore of Lesser Slave Lake. For a long distance on the Athabasca a black petroleum-bearing sandstone underlies these banks of tarry sands.

What these tar sands may yet mean does not clearly appear, for no borings have been made excepting at Athabasca Landing, where they were not reached at

a depth of 1770 feet; but it is evident that incalculable quantities of petroleum have in past ages come to the surface, and the more volatile portions have evaporated and left the heavier ingredients behind. It can hardly be supposed that all the petroleum has escaped in this way to the surface, but all that is now known is that everywhere, over an area of 150,000 square miles, are indications of petroleum-bearing rocks; and if those rocks be exhausted under the sands, where they were partly exposed, the immense area uncovered no doubt remains in reserve waiting to be tapped.

Similar indications are found, over the whole area, of the existence of coal. Beds of lignite four feet thick occur at the great bend of the Athabasca, and may be seen for miles 150 feet up in the cliffs along the river. From Buffalo river down past Fort M'Murray seams of lignite are seen. Lignite is reported at many places in the interior, at Peace river and on Lesser Slave Lake, and, as in Alberta, these lignites change into true coal as the mountains on the west are approached.

At Grand Rapids, on the Athabasca, natural gas is found and the water is disturbed by water bubbling up, or, as the voyageurs say, "boiling." On the banks the men light it to cook their food. This is of importance chiefly as an indication of petroleum, for the gas cannot be utilised in so remote a locality. On the Clearwater river mineral springs have been found, and also at a place on the Athabasca called La Saline, where the bank is encrusted with saline deposits. On the Peace river and some of its tributaries gold has been found on the bars. Mr. M'Connell, of the Geological Survey, found "colours" of gold on most of the streams by washing a few handfuls of sand in a frying-pan.

Although the country is timbered throughout, the

trees are not large over much of the territory under review. They are all trees of the sub-arctic forest described in a previous chapter, and vary in size, according to local circumstances, from one foot to two feet in diameter.

Agriculture

The country on the Peace river has awakened the enthusiasm of all who have seen it. In his evidence



PEACE RIVER.

before a committee of Parliament Mr. Christie, formerly a chief factor of the Hudson's Bay Company, described it as "the finest country he had ever seen," and he was then living on the St. Lawrence. The soil, he said, was a beautiful dark loam. Crops have been raised there for 100 years, and wheat is as certain as in Manitoba. It is an open, park-like country, and

horses winter on the open prairie, and the Chinook winds keep the wild grasses clear of snow for them as in Alberta, 500 miles to the south. Wheat is grown not only at Dunvegan, but at Fort Vermilion, on the Peace, farther north in lat. 58° , and the country is productive farming land along the valley for hundreds of miles. This is beyond question, for large farms are worked there. South of the valley of the Peace the soil is also good, but it is thickly wooded, and the swampy parts round the lakes require to be drained.

Settlements

The settlements in Athabasca are all collected around Hudson's Bay posts or mission stations. Fort Chipewyan is a large post. It is the seat of an Anglican bishop and of a Roman Catholic bishop. There is a convent of Grey Nuns, with twenty-five pupils. At Fort M'Murray is another Roman Catholic mission. At Little Slave Lake beside the Hudson's Bay post, there are missions of the Anglican and Roman Churches, with schools. On the Peace river, at Vermilion, there are missions of both churches, besides the Hudson's Bay post. At Dunvegan there is an important Hudson's Bay post, and missions of both churches. This post is the garden of the north-west. Every kind of grain and garden vegetable is grown there. Mr. Ogilvie, in his visit in 1891, saw the crops, and describes the large size of the vegetables grown. As a note of the conditions existing, he remarked two sunflowers which measured fourteen inches across the seed disc. All along the Peace these favourable conditions exist. Ploughing at Dunvegan commences about 14th April, and potatoes are planted at the end of April.

The Mackenzie River

It is under the name of the Slave river that the Mackenzie flows out of Lake Athabasca. Its course is northwards, and about 20 miles from the lake it receives the waters of the Peace river. If that river be in flood, it flows over also into the lake by the Quatre Fourches river, but under ordinary circumstances the Quatre Fourches discharges into the Peace. At Grahame Landing, 102 miles down from the lake, the river drops 240 feet through a series of rapids which interrupt navigation for 14 miles to Fort Smith; from that point navigation is uninterrupted for over 1100 miles to the Arctic Ocean. A cart-road has been constructed on the west side of the river, and all supplies in transport for the lower river must be reshipped there. The Laurentian rocks, which come out at the western end of Lake Athabasca, follow down on the east bank of the river as far as Fort Smith, where they finally strike away directly to the north. From Fort Smith the river flows with a slow current for 190 miles between low banks, and through a flat, wooded, alluvial country, until it falls into Great Slave Lake, midway on the southern shore, near Fort Resolution.

Fort Smith is a place to remember as the head of navigation from the sea, and it is as near as possible on the parallel of 60° N. About 20 miles down the Slave river the Salt river falls in—a stream with water rendered brackish by three or four salt springs 20 miles from its mouth. The springs have formed evaporating-basins, and the salt crystallises out perfectly pure, and is shovelled into bags and used all over the North-west without further preparation.

Near the inflow of the Slave river into Great Slave

Lake is Fort Resolution, an important Hudson's Bay post, where are missions of the Anglican and Roman Churches. The spring is later than at places farther north on the main river; for, as there is no current, the ice lingers in the lake until the end of June, and the country is rocky around it, yet garden vegetables are grown. The lake is about 300 miles long, with an average width of 46 miles. Its waters are very clear and very deep. It covers an area of about 10,100 square miles, and it is only 391 feet above the sea. Much interest attaches to this lake, for Back built Fort Reliance on the extreme eastern arm, and started thence on his expedition down the Great Fish river to the sea. Fort Rae, at its extreme northern point, was the English and Canadian international Polar station, and there is a Roman Catholic mission there. The western shore of the lake is well wooded with good spruce, with belts of Banksian pine, poplar, and birch, but the eastern and northern arms project into the Barren Grounds. The Hay river is the most important tributary, and is 400 miles long, flowing in from the south. Much of the coast of the lake is still unsurveyed.

From the western end of Great Slave Lake, the river, thenceforth the Mackenzie, flows northward in a broad and deep stream. The banks are low and the country is level, covered with spruce and broken by many lakes and marshes. About 50 miles down is Fort Providence, where the Hudson's Bay Company have a post, and the Roman Catholic Church a mission, with a church, orphan asylum, hospital, and school. The Grey Nuns, from Montreal, have the care of these latter institutions. Barley is grown here, and even wheat usually escapes frost, and many garden vegetables are raised, for the ice moves away earlier than from the lake.

Fort Simpson is the next post on the Mackenzie. It is 324 miles from Fort Resolution, on an island in the river, close to the junction of the Liard, and very nearly on the parallel of 62° . This is said to be the most northern point at which wheat will ripen, but it is a very uncertain crop. Barley and garden vegetables are grown, and with good success. Cattle are kept, and are fed on the native grasses. The potatoes grown here are as large as those raised 1000 miles farther south. The timber is large, and consists of poplar, spruce, birch, and hemlock. The ice breaks up between the 1st and 15th of May, and the river does not close again until the beginning of November. In 1850 Lieutenant Pullen, with two boats, from H.M.S. *Plover*, which had entered the Arctic Sea by Behring Straits, went up the river and wintered at Fort Simpson, returning to his ship in the spring.

The Liard river is a very large stream. It rises in a number of lakes flowing into Frances Lake, close to the source of the Pelly (Upper Yukon), and flows east, through the Rocky Mountains, in a course almost as long as that of the Peace. It is a turbulent and dangerous stream, but in its lower course it is navigable to Fort Liard, and flows through a densely wooded country, with good soil. Its name, *Rivière aux Liards* (Cottonwood or Poplar river) indicates the quality of land on its banks. At Fort Liard, 162 miles from its mouth, it is a mile wide. There the soil is a black loam. Wheat may be grown, and barley is a regular crop, and used as feed for cattle.

Below Fort Simpson, as the Mackenzie approaches within 25 miles of Fort Wrigley, one of the flanking ranges of the Rocky Mountains rises to the east of it, and for several hundred miles its course is in a valley between two mountain ranges 3000 to 4000 feet high. The banks of the river are low, and the country is low to the

mountains on both sides. The distance from Fort Simpson to Fort Wrigley is 134 miles, and from thence it is 180 miles to Fort Norman. At times the mountains close in, and again they spread out and form a broad valley. At Fort Norman there are missions of the Roman and Anglican Churches. It is in lat. $64^{\circ} 41'$, but barley is grown and the grass is luxuriant.

Near Fort Norman, Great Bear Lake discharges by Great Bear river into the Mackenzie. The lake is irregular in shape: its length is 175 miles, and its breadth varies from 25 to 45 miles; but if it were measured across by its opposite northern and southern arms, the distance would be 180 miles. The area of the lake is 11,200 square miles, and its average depth exceeds 270 feet. It is open for only three months in the year. In 1873 Déase and Simpson built Fort Confidence at the extreme north-eastern point of the lake, and made it the headquarters from whence they carried on their remarkable explorations during three years. It was in lat. $66^{\circ} 53'$ and inside the Arctic Circle, but they found abundance of game. The lake was, and still is, full of fish; wild fowl were plentiful in their season, and caribou and musk oxen were numerous. It was an admirably selected point, for they could readily reach the Coppermine river below most of the heavy rapids and the Arctic coast was more accessible from there than from any of the points selected by Franklin or Back.

From Fort Norman to Fort Good Hope is 170 miles. This post is nearly on the Arctic Circle. Besides a Roman Catholic church and mission, there has been a convent of Sisters of Charity established there for thirty years. Here are what are called the Ramparts of the Mackenzie. The river flows for 7 miles through a cañon of steep, overhanging rocks, 150 feet high. The broad

stream narrows to half a mile, and flows with an even current and with a depth of 350 feet. In 1887 a whale came up to this point from the Arctic Ocean, from which fact the depth of water in the delta may be surmised.

After passing Fort Good Hope, the river flows between banks sometimes 200 and 300 feet high. The country is still wooded on both sides of the river. On the east the trees are small, but on the west side the white spruce is from 6 to 18 inches in diameter. Black spruce, balsam, poplar, aspen, and tamarack grow to a fair size as far as Fort MacPherson.

Fort MacPherson is in lat. $67^{\circ} 26'$, and is the most northern abode of civilised man on the Mackenzie. There is an Anglican and Roman mission there. It is on the Peel river, 14 miles above the forks, where one branch flows towards the delta of the Mackenzie and the other into the Arctic Sea. The Hudson's Bay steamer *Wrigley* makes this her last stopping-place.

The delta of the Mackenzie has not been accurately surveyed. The great river spreads out in many arms, and flows for 70 or 80 miles between very low banks through an alluvial plain. On the east branch the depth of water is 12 feet. Even here the forest follows the river, and the spruce is 12 to 15 inches in diameter. At Fort MacPherson may be seen the wonderful effect of the long solar day. A recent traveller reports that on 20th June the buds on the trees appeared, and on the 22nd they were out in leaf. Throughout July the temperature was $+64$ through a 24-hour day of sunlight. At Fort MacPherson the territory of the Eskimo commences, and about 350 frequent the fort.

On the Arctic Ocean, 80 miles west of the westernmost mouth of the delta, is Herschel Island, the best shelter harbour on the coast. It is in lat. $69^{\circ} 40'$.

Twelve United States whaling ships wintered there in 1895-96 with crews of about 1000 men. Supplies were sent to them from San Francisco. It is a small island seven miles long by four wide. The tide rises there two or three feet flowing from the east.

Resources

The resources of the lower Mackenzie valley are similar to those of the territory of Athabasca. All the waters and lakes are stocked abundantly with fish—whitefish and trout, the latter of very large size, and in the river a species of fish concerning which there is so much uncertainty that it is called the *inconnu*. The following account of it, contributed by Professor Prince, may be relied upon as accurate:—

“The *Inconnu* (*Stenodus Mackenzii*), sometimes called the Mackenzie river salmon, is found in most of the large rivers of the north-eastern portions of the continent bordering on the Arctic circle. It is neither a salmon nor a whitefish, though in general outline it resembles the latter. The projecting lower jaw, in contrast to the shortened lower jaw of the whitefish, and its great size, twenty to fifty pounds weight, are characteristic. The tail is deeply forked, the scales somewhat diminutive for so large a fish, while the glittering silvery coloration adds to its imposing appearance. Its flesh is superior, and it spawns in the late fall. In certain rivers in northern Russia a closely allied species occurs.”

Coal has been found in localities at distances from each other all over the valley, but so far as it has been examined along the rivers it is lignite. Other seams have been reported at various places in the interior, and it is more than probable that bituminous

and anthracite coal will be discovered in the region nearer the mountains. Near Fort Norman two seams are exposed. The upper one has been burning for 100 years. Sir Alexander Mackenzie saw it when he passed down in 1789 on his famous voyage of discovery. Tar springs are met with on Great Slave Lake, and bituminous limestones occur in many places, indicating the existence of petroleum. The extensive deposits of salt have already been noted, and also the fact that the whole country is wooded. Moose and caribou are plentiful, and somewhere in these forests a few wood buffalo have taken refuge and many sportsmen have been out in vain search for them. May the search ever be vain, for men are many, and will not be missed, but buffalo are few.

Climate

It has been pointed out elsewhere that the isothermal line of summer heat sweeps very far northward along the Mackenzie valley, and this fact, taken with the long days of summer, draws the limit of growth of cultivated crops very far to the north. The line of grasses and of forest stretches through the valley north into the delta of the Mackenzie and close to the shore of the ocean. The causes of this have been pointed out elsewhere and are briefly the low elevation of the land combined with the influence of the Chinook winds from the Pacific and the presence of large bodies of water. Very little can be predicated generally concerning the climate and productions of a region extending northward through fifteen degrees of latitude. The subject has been incidentally treated in connection with the description of successive stretches of the river to the sea. The mention of the growth of crops at the different points will afford important indications of

climate. The winters are severe, but, as explained in a previous chapter, spring seems to open simultaneously over an immense reach of territory to the north-west, and there is sufficient heat in summer to ripen wheat up to lat. 60° N. There does not seem to be any great difference in the severity of the winter frost or the heat of the summer; such differences as exist are in the direction of shorter summers and earlier frosts.

Fort Chipewyan, in lat. $58^{\circ} 43'$, may be taken as a central point, and Mr. Stupart, the Director of the Magnetic and Meteorological Observatory at Toronto, has supplied the following meteorological table:—

FORT CHIPEWYAN METEOROLOGICAL TABLE

For a period of ten years.	Average mean temperature.	Absolute maximum, 10 years.	Absolute minimum, 10 years.	Total precipitation. inches.
January . . .	$-14^{\circ}9$	45	-49	0.68
February . . .	$-10^{\circ}6$	46	-50	0.68
March . . .	$4^{\circ}5$	47	-41	0.81
April . . .	$24^{\circ}7$	56	-22	0.67
May . . .	$41^{\circ}9$	79	5	0.41
June . . .	$55^{\circ}6$	90	24	1.51
July . . .	$61^{\circ}4$	84	26	3.19
August . . .	$57^{\circ}9$	89	25	1.16
September . . .	$45^{\circ}1$	79	13	1.58
October . . .	$30^{\circ}0$	65	-9	0.96
November . . .	$13^{\circ}0$	56	-33	0.73
December . . .	$-2^{\circ}3$	49	-41	0.67
				13.05

Some indications may also be gathered from the dates of the opening and closing of navigation at various points as follows in the records of eleven years:—

	Latitude.	Navigation.	
		Opens.	Closes.
Fort M'Murray,	$56^{\circ} 40'$	April 18 to May 18	Oct. 24 to Nov. 14
Fort Simpson	62°	May 1 to May 14	Nov. 7 to Nov. 30
Fort Norman	$64^{\circ} 54'$	May 9 to May 28	Nov. 7 to Nov. 18

There being no current on Great Slave Lake to carry away the ice, it lingers there until the middle of June.

Communications

A sated globe-trotter in search of new fields may be interested to know that the land of the midnight sun is now within twenty-three days of comfortable travel from Ottawa. There are steamers on the Mackenzie down to Fort MacPherson on the delta and Mr. Ogilvie gives the following itinerary. The steamer *Wrigley*, plying upon the last stretch of the river, is a propeller with 80 feet keel and 14 feet beam and draws 6 feet.

	Days.
Ottawa to Calgary—Canadian Pacific	4
Calgary to Edmonton „	1
Edmonton to Athabasca Landing, 90 miles by waggon .	3
Athabasca Landing to Grand Rapids by steamer <i>Athabasca</i>	1
Grand Rapids to Fort M'Murray by horses	3
Fort M'Murray to Fort Chipewyan by steamer <i>Grahame</i> .	1
Fort Chipewyan to Grahame Landing by steamer <i>Grahame</i> .	1
Grahame Landing to Fort Smith, 14 miles by horses . .	1
Fort Smith to Fort MacPherson by steamer <i>Wrigley</i> . .	8

23

History

It has been stated in a previous chapter that the French fur-traders had established posts throughout the region now known as Manitoba and Assiniboia, and had even pushed on as far as the foot of the Rocky Mountains. After the cession of Canada to England adventurous merchants of Montreal took up the enterprises interrupted by the war and, first individually and then in concert as the North-west Company, extended their operations into regions far beyond the French explorations. The English on Hudson's Bay were sitting quiet at their posts and

waiting for the Indians to come, but the Montrealers pushed their enterprises with such vigour that the Hudson's Bay Company were stirred to extend their posts into the interior.

The French posts followed the Saskatchewan and its southern branch—for they were aiming towards the Missouri—the Montrealers reached out towards the north. Fort Cumberland was established in 1772 by Joseph Frobisher, and he intercepted at Frog Portage a large band of Indians going to Fort Churchill to trade. He bought all their furs, and made such a successful trade that he called the place "Portage la Traite." He was the first white man on that portage and on the Upper Churchill or Missinipi river. His brother, Thomas Frobisher, built a post at Isle à la Crosse in 1775, and Peter Pond, another Montrealer, pushed farther west and crossed Methy Portage in 1777, and the following year established a post on the Athabasca river (*Rivière à la Biche* or Elk river) about twenty miles from the lake. From thence he sent Leroux and Grant to Great Slave Lake and river, where they established the posts now called Fort Resolution and Fort Providence. On the formation of the North-west Company the Athabasca district was allotted to the care of Alexander Mackenzie, who sent Boyer, a French Canadian, to establish a post on Peace river and one on Lake la Marthe, north of Great Slave Lake. He had formed the design of following the great river to the Arctic Ocean, and he left his friend Roderick Mackenzie in charge. It was this latter Mackenzie who built the first Fort Chipewyan on Lake Athabasca. It was on the south side of the lake, and was finished during Alexander Mackenzie's absence in 1789. In 1820 the post was moved to its present site. It will be seen, therefore, that some of these posts have

a history far more ancient than most of the cities of Canada, and that the discovering and opening up of the Mackenzie basin was effected by merchants from Montreal under the English régime, though many French Canadians were associated in these enterprises.

NOTE TO CHAPTER XVI

The following works will be useful for further information on the subject of this chapter :—

Report of a Committee of the Senate of Canada upon the resources of the Great Mackenzie Basin, and the country eastward to Hudson's Bay. Ottawa, 1888.

This exasperating work is a volume into which an immense mass of information has been thrown without index, classification, or guide of any kind. Most of the information is of great value, and the book is indispensable for a knowledge of the resources of the Mackenzie valley, though it will sorely try the patience of any one who attempts to master its contents.

OGILVIE, WILLIAM.

Report on the Peace River and tributaries in 1891. Ottawa, 1892.

The following are the reports of the officers of the Geological Survey :—

ATHABASCA DISTRICT.

Dr. Selwyn, 1876. Prof. J. Macoun, 1876. G. M. Dawson, 1880.

R. G. McConnell, 1880, 1891. R. Bell, 1884. J. B. Tyrrell, 1893. D. B. Dowling, 1893. J. B. Tyrrell, 1896.

YUKON AND MACKENZIE RIVER DISTRICTS.

G. M. Dawson, 1888. R. G. McConnell, 1889.

OTHER UNORGANISED TERRITORIES.

A. S. Cochrane, 1880. R. Bell, 1884. J. B. Tyrrell, 1894.

CHAPTER XVII

THE YUKON TERRITORY

IN the uttermost north-west of the Dominion is the provisional district of Yukon—extending over an area of 192,000 square miles. It is in the shape of a right-angled triangle. The base is the parallel of 60° N., separating it from British Columbia at the south; the perpendicular is the meridian of 141° W.—striking the Arctic coast at Demarcation Point, and the hypotenuse is the summit of the mountain range which borders the valley of the Mackenzie and about 70 miles of coast west of the delta of that river. While this description is sufficiently accurate for practical purposes it must be observed that the boundary of 141° does not come down quite into contact with the parallel of 60° ; it comes down to the summit of the range of mountains on the coast perhaps 15 or 20 miles short of lat. 60° N., and it just incloses Mount St. Elias within British territory; so that large mountain mass is the uttermost western point, within one or two miles of British dominion. The height of this mountain is variously given, but the most accurate figure is probably 18,010 feet. It has been supposed to be the highest mountain in North America, but Mount Logan, within 20 miles of it in long. $140^{\circ} 30'$, is given in the map of the U.S. Geodetic Survey at 19,514 feet.

These are the highest peaks on the North American continent. There is another Mount Logan, 9000 feet high, near Lake Frances at the source of the Liard, which must not be confounded with this one near the Alaskan boundary.

This district received its name from the fact that all the large rivers which combine to form the Yukon, rise in it. The river was not called the Yukon by its discoverers higher up than the junction of the Pelly and Porcupine rivers for the reason that the upper rivers were all named and mapped before they were known to connect with the lower river. The name Yukon was given by James Bell of the Hudson's Bay Company in 1842. It is the Indian name and signifies "Great River." At the junction the Hudson's Bay Company founded Fort Yukon in 1847; but in 1867 it was discovered to be 110 miles west of the boundary of 141° W. and, upon an abrupt notice to quit by an United States officer, the fort was abandoned. This point is almost exactly upon the Arctic Circle. The name Yukon was extended in the course of a few years to the Lower Pelly as far as the junction of the Lewes. This part of the river is called the Upper Yukon.

During the last two years attention has been strongly attracted towards this region because of the immense extent of the gold deposits found there and their exceeding richness. The gold district is intersected by the meridian of 141° , and it is fortunate for Canada that the boundary there is an astronomical line; for as that is a definite mathematical limit, there can be no possible diplomatic excuse for disfiguring that part of the boundary with another re-entering angle. A joint commission of Canadian and United States officers has been for two years on the ground collecting accurate topographical

information. It reported last year, and Mr. W. E. King, the astronomer of the Department of the Interior, has returned, but Mr. William Ogilvie is still in the territory surveying and cutting out a conventional boundary-line in order to settle provisionally the respective jurisdictions of the United States and Canadian authorities. His reports and those of Inspector Constantine in command of the North-west Police have recently been received, and have revealed to the Canadians themselves a world of interest and resource previously undreamed of. This chapter is largely based upon their reports dated as late as January 27, 1897.

Contour of the Land

The interior of this country is very little known. It differs from the Alaskan territory in being more or less mountainous throughout; for the Cordilleran ranges spread through it in many parallels, running in a general direction with the coast. What is definitely known beyond the reports of the Hudson's Bay officers is based on the subsequent explorations of Dr. G. M. Dawson and Mr. R. G. McConnell of the Geological Survey, and of Mr. Wm. Ogilvie of the Department of the Interior. The pioneers and miners now in the territory are not writers, and very few travellers have visited this very secluded and inaccessible region. The reports of late explorers now coming in have all the interest of discoveries. It is not a country of tundras, but of mountain ranges and rolling hills, penetrated everywhere by large navigable rivers. The most continuous range is that nearest the coast, which is 84 miles wide with a general height of about 6000 feet; but there are many high peaks rising to 8000 and 10,000 feet.

The range of which Mount St. Elias is the chief feature commences at Cross Sound and attains a much higher elevation, and of this range Mount St. Elias is one of the loftiest peaks. During the present summer several parties of scientific men and skilled climbers are to attempt the ascent—an arduous task; for the snow-line is at the height of 2000 feet, and all the remaining distance to the summit is over snow and ice. The elevation of the general surface of the territory at the head of the Upper Pelly is 2965 feet. At the confluence of the Pelly and Lewes it falls to 1555 feet. The average level of the whole territory is estimated at about 2000 feet.

Until some better route than the present one over the Chilcoot pass is found the Yukon must be the main avenue into the country and, by treaty, the navigation is free to Canada. It falls into Behring Sea by several mouths, and they are all so obstructed by sand that sea-going steamers are unable to enter any of them; nor is there any site at the mouth of the river suitable for a town. The greatest depth anywhere is eight feet, and in consequence, the river steamers, which are stern-wheeled drawing only four feet, are obliged to wait for calm weather and go out to meet the ocean vessels at St. Michael's in the open Behring Sea, 80 miles north of the entrance to the river. The ice is all down about the middle of June, and at the end of the month, when Norton Sound is clear, navigation commences. For hundreds of miles the river flows through the perfectly level tundras of Alaska—flat mossy morasses on a frozen sub-soil, where it is difficult to find a dry spot to land upon. It is a very wide monotonous stream; not deep, but flowing with a tranquil current on its lower course; but, on the upper river about Cudahy and farther up, the current runs at the rate of about five miles an hour;

for much of the season it is even swifter. Two transportation companies have steamboats plying from the mouth of the river to Cudahy, beyond which it is navigable to the head of Teslin Lake. It is over a thousand miles from its mouth to the junction of the Porcupine at old Fort Yukon, and 2300 miles to the extreme head of its waters. The trip up to Fort Cudahy takes eighteen to twenty days, and two trips are made in the short season of summer. The drainage area of the Yukon is estimated at 330,982 square miles, about one-half the area of the Mackenzie basin.

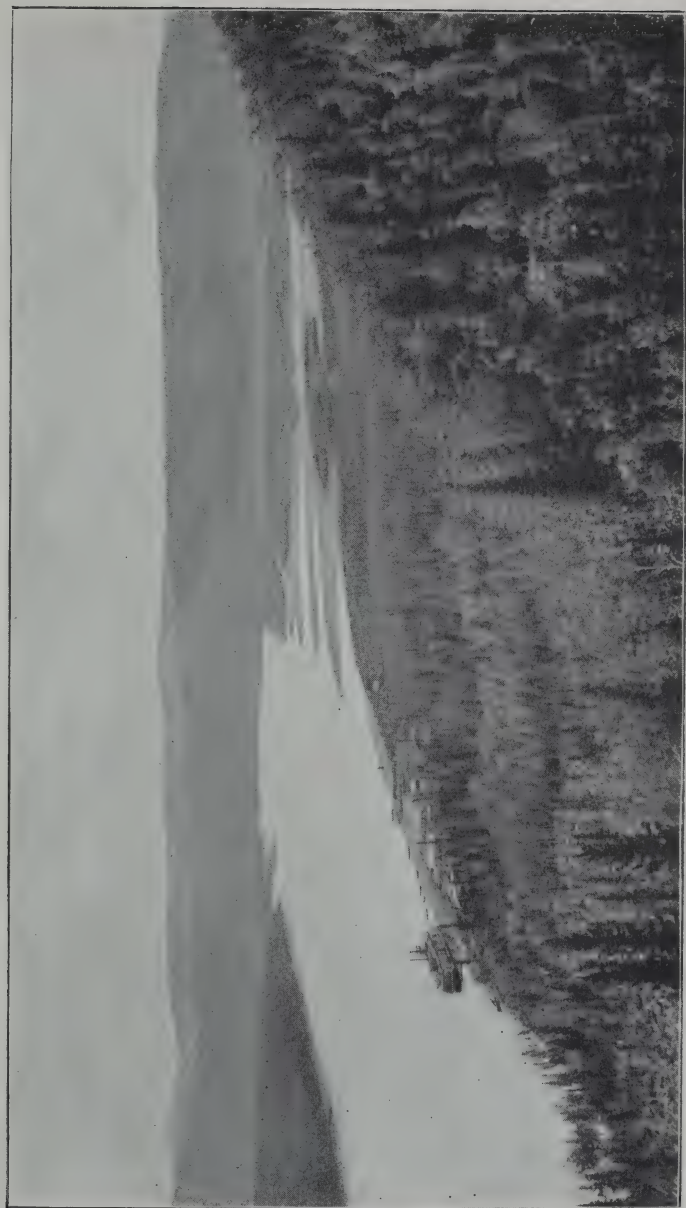
Returning, however, to the exclusive consideration of the Yukon territory which belongs to Canada; it consists, as before stated, of the higher lands drained by the chief affluents of this great river. The country is fairly well known along the chief water-courses; for these have been travelled first by officers of the Hudson's Bay Company, and more recently by explorers of the Geological Survey, and of the Department of the Interior. From the chief streams, miners and prospectors have followed up many of the smaller streams, but away from the water-courses very little is known.

Hydrography

It has already been stated that the Porcupine river meets the Upper Yukon at the site of old Fort Yukon to form the main Yukon river. The course of the Porcupine is mainly within the Arctic Circle, and the confluence is almost precisely upon it. The Porcupine is navigable for light steamers for 100 miles, and an easy canoe route exists from its upper waters, at the great bend in its course, by way of Lapierre House to Fort Macpherson on the Peel, which falls into the delta of the Mackenzie, so

that communication is easy from the Yukon to the Mackenzie within the Arctic Circle.

The Pelly is a large river, and for a time the name Pelly-Yukon was used to denote the whole river to the sea. It is navigable for small steamers to within fifty miles of old Fort Pelly Banks on the Upper Pelly, within twenty miles of Finlayson Lake, from whence the water flows by the Liard into the Mackenzie. Commencing at old Fort Yukon and proceeding up the Upper Yukon river from its confluence, the first stream worthy of note is Forty Mile Creek (so called because it was supposed to be forty miles from Fort Reliance)—not on account of its size, although it is about 250 miles long, but because it is the centre of supplies for the miners. The little town of that name was supposed to be within Alaskan territory, but it turns out to be eight miles within the Canadian line. Fort Cudahy is the centre of Canadian administration. It is in lat. $64^{\circ} 25'$ and long. $140^{\circ} 18'$, and is the most northern point in the Empire occupied by British troops. A detachment of sixteen men of the North-west police with two officers and a surgeon, was sent there in 1895, and in three months they got out the lumber and built a fort at Cudahy, at the junction of the Yukon and Forty Mile Creek, three-quarters of a mile from the mining town and across the creek. It would be misleading to call them by their proper name, "mounted police," as dogs are used for travel in the winter, and in Alaska the United States officers are training reindeer and have imported deer and men from Lapland. Food has to be carried for dogs, but the reindeer and the barren land cariboo (which are practically the same) find their own food in travelling. What the police require here is a swift steamboat; although, to the credit of the miners, it should be observed that



CUDAHY, UPPER YUKON. STEAMER AT WHARF.

no serious crime has so far been committed. There have been as yet no civil courts, and the miners, until the arrival of the police, administered their own law. Fort Cudahy is 1800 miles from the mouth of the Yukon. It has now a collector of Customs, and the Anglican Bishop Bompas has a church and resides there. There is a steamer from this point running up to old Fort Selkirk, and at Forty Mile City the Alaska Commercial Company has its headquarters. At Fort Cudahy opposite are the headquarters of the North American Trading and Transportation Company. Both companies have steamers on the rivers. Still following up the Yukon, two large rivers fall in almost opposite each other, the White river from the south and the Stewart from the north. The White river is turbulent and shallow, and colours the lower river with its milky waters; but the Stewart is said to be navigable for 200 miles. The next important confluence is at old Fort Selkirk. There the Lewes and the Upper Pelly unite. The Upper Pelly receives, about seventy-five miles from its mouth, the waters of the Macmillan, a large river yet unexplored, supposed to rise in the Rocky Mountains, near the sources of the Peel. The length of the Upper Pelly is 325 miles, and its source is believed to be in the Pelly lakes about 131° W. and lat. 62° N., close to the source of the Liard. Mr. Warburton Pike has, however, shown some reason for doubting this.

Returning to old Fort Selkirk at the junction of the Upper Pelly and the Lewes—the united river is there three-quarters of a mile wide. The Lewes is a large river and a most important one; as it must become, for goods as well as miners, the highway into the country. This river is navigable as far as the White Horse rapids and Miles Cañon. There an interruption of three miles

occurs, but that once passed there is navigation to a group of lakes near the Chilcoot Pass up to a point within twenty-five miles of tide water at the head of Lynn Channel.

It would be of very little use to attempt to give further details of the wonderful river system which penetrates this territory. All the streams mentioned are very large rivers, and there are many others which have not been explored. The whole region is now opening up and every month brings notices of new discoveries. Cudahy commands a navigation of more than 1500 miles on the interior rivers—the Lewes, Pelly, Stewart, Porcupine, Macmillan and others.

All these rivers run in the general direction of the mountain ranges, but there are two streams which cut the ranges and give access to the interior—the Stikine in British Columbia, and the Liard in the extreme south-east which rises in the Yukon district and flows eastward into the Mackenzie, cutting through the Rocky Mountains on its way. It was by the Liard that the first white man, Robert Campbell, entered the country, and it is now beginning to be recognised that the best entrance to it on the south is by the Stikine from British Columbia.

Communications

Once within the Yukon territory communication is comparatively easy by the rivers; but entrance, save by the long circuitous course from the mouth of the Yukon, is difficult. The supplies for the mining town at Forty Mile Creek are sent in by that route. The distance is enormous both by sea and river, but heavy freight can be got in by no other route under present conditions. The route by the Porcupine is only a canoe route, and is too

far north and too circuitous to be available; the route up the Liard, from the Mackenzie to the head-waters of the Pelly, is direct enough, but the Liard is a very dangerous river to navigate, even in canoes, and the route had to be abandoned by the Hudson's Bay Company. The geographical problem now before the Canadians is how to reach the territory from British Columbia at the south and avoid the enormous détour by St. Michael's. It does not seem difficult on the map; for the head-waters of the Lewes approach closely the tide water of the north of British Columbia, but intervening is the barrier of the Coast range of mountains.

The route hitherto followed by the miners is by Lynn Channel, and the point of departure is at Juneau City in Alaska, from whence there is a steamer to Taiya, 100 miles distant, on Taiya Inlet, at the head of Lynn Channel. Canoes may be used for a few miles from that point to the Cañon. From thence it is 15 miles to the summit of the Chilcoot Pass (3475 feet), and 13 miles of descent leads to Lake Lindeman, which discharges its waters by a chain of lakes into the Lewes. It is $23\frac{1}{2}$ miles only, by direct measurement, but 28 miles by trail; if trail it can be called. It is a hard climb over bare and broken rocks among snow and ice all summer. In winter the miners haul loads over the pass on hand sledges and across Lake Lindeman and the chain of lakes in succession to the foot of Lake Laberge, from whence they float down on rafts or boats in the spring. There is another pass, the White Pass, a little to the south, and another the Chilcat not far to the north, but both are at present considered to be more difficult than the Chilcoot Pass and they are not used. Another difficulty exists on this route; for, when the pass has been surmounted and the main Lewes is reached, it is absolutely necessary to portage for three

miles round Miles Cañon and the White Horse Rapids. In the winter of 1895 the Canadian mail was abandoned at the summit of this pass, and was found in the snow in the following summer. The mail courier was badly frozen. Two mails got through, however, that winter—one by the Chilcat and one by the White Pass. A route has been spoken of to the Pelly called the Dallas trail, where horses might be got in, but little is known about it.

In view of these difficulties attention is now turned to Teslin Lake. This is a deep lake 80 miles long which discharges by the Teslinto or Hootalinqua river (100 miles), into the Lewes, thirty miles below Lake Laberge, and below Miles Cañon and the White Horse Rapids, thus getting into the Lewes beyond all the dangerous obstructions. The Teslinto is a broad and quiet stream, and from the head of Lake Teslin a steamer can go down to Cudahy and to the mouth of the main river on Behring Sea, a distance in all of 2400 miles of interior navigation. The whole outer circuit in the ocean, round by Oñalaska and Behring Sea would then be avoided.

The cardinal point is, then, Teslin Lake, and that may be reached from the sea by two routes. From the head of Taku Inlet the Taku river is navigable by canoes for 53 miles as far as the junction of the Nahkina river. From that point to the head of Teslin Lake is 70 miles, through a country not mountainous or difficult. The Taku river is not, however, available for steamers. The total distance from tide to lake is thus 123 miles, or 150 miles from Juneau City, near the entrance of the Lynn Canal.

The other route to Teslin Lake, and one which is meeting with much favour, is by the Stikine river to Telegraph Creek, 140 miles, all available for steamers. From thence it is 150 miles in a direct line to the head

of Teslin Lake ; 53 miles of which distance is covered by a trail already made to the Hudson's Bay post at Egnell's Creek.

In comparing these routes it will appear that from steamer navigation at Telegraph Creek to the head of Lake Teslin is 176 miles, and from Juneau City to the same point is 150 miles. Telegraph Creek is in Canadian territory, and the inconvenience of passing goods through United States territory will be avoided and the whole interior country be opened up by a short route from Victoria. The distance from the head of Lake Teslin to Cudahy is 600 miles. There remains only to be noticed the Cassiar trail from Telegraph Creek to Dease Lake, the head of one of the branches of the Liard ; but it will appear on consideration that Teslin Lake is the key point of the problem how to get into the Yukon territory without going round 2000 miles by sea to the mouth of the river, and 1500 miles more on the river itself.

Resources

The same remark which has already been made concerning the Lower Mackenzie is applicable here. No one will go to the Yukon in search of farm lands, but nevertheless the country in its southern part will produce most of the crops necessary for food. It will, at Fort Selkirk and south of it, produce the hardier crops such as barley, rye, turnips, flax. There are areas throughout of gently rolling land and the river valleys are wide. There is sufficient rainfall, but the country is protected by mountains from the incessant precipitation of the Alaskan coast. The Yukon territory of Canada is well wooded with timber of fair size, mostly white and black spruce. At Cudahy dry timber is beginning to be scarce, having been cut

away from the river bank where it was most accessible. In the interior there is plenty if there were horses or oxen to haul it out when cut. An island in the river has been laid out for a market garden; for ordinary vegetables may be grown with fair success. At old Fort Selkirk, in lat. 63° , there are forests of large timber and pleasant green meadows. It is 1000 miles north of Victoria, but when the fort was occupied crops of potatoes and barley were raised there, and it has been calculated that, even in this remote region, there are in the southern part 30,000 square miles available for agriculture and stock raising.

The country abounds in moose and caribou, and these, with salmon, are the chief food of the Indians. Fur-bearing animals are abundant—silver-gray and black foxes, marten and sable, and lynx. Bighorn sheep and mountain goats are numerous, and bears both black and grizzly. Moose have been increasing of late years and are extending their range. Fish are not so plentiful on the Yukon, but there are whitefish, lake trout, and grayling in the tributary streams and lakes. Salmon go up 2300 miles to the Pelly lakes, but they are in very poor condition after their long journey.

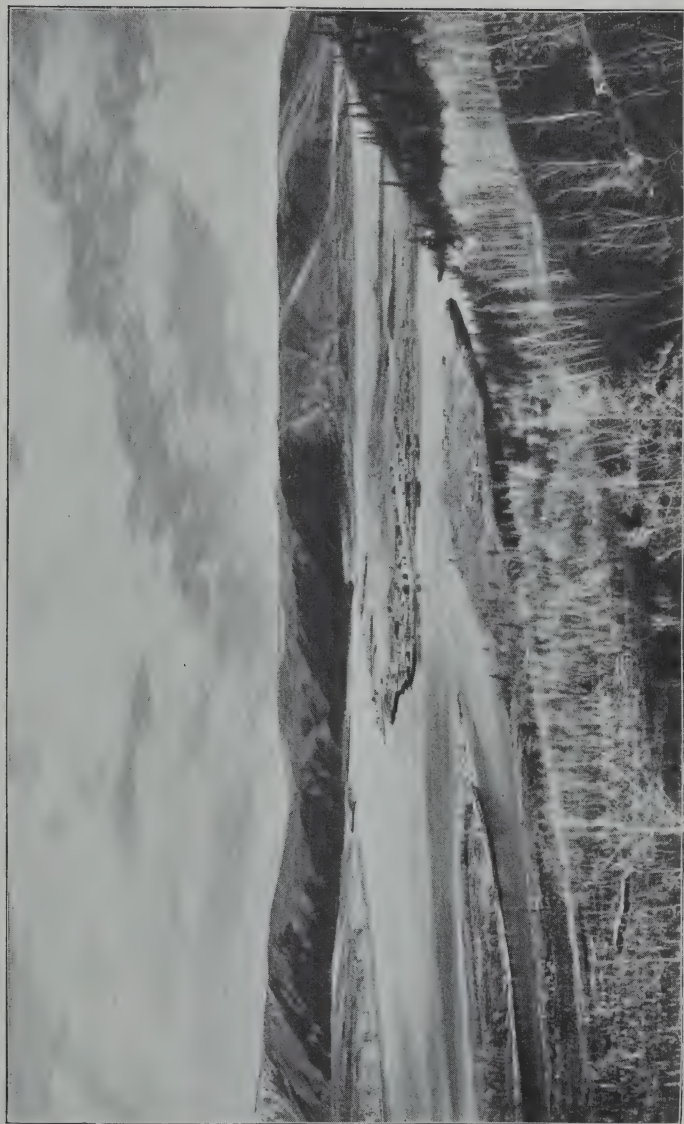
Gold Mining

It is, however, as a mining country that the Yukon district is important. The geological character of the territory is, so far as known, a continuation of that of British Columbia. There are the same Palæozoic rocks, and the mountains are a continuation of the same ranges, which, at the south, have been proved to abound in mineral wealth, and especially in the precious metals. There is a gold-bearing belt of territory of indefinite

width, and three hundred miles long to the north from the Chilcat Pass, and advices received while these pages are going to press show that the Canadian Yukon region is one of the richest areas for gold-mining which has ever been discovered. The climate is severe and access is difficult, so that strength, courage, and good health are necessary to all who go there. The climate is healthy for the healthy, because there are no fevers, but the life of a miner is laborious. It is, so far, all placer mining of the most primitive kind. The miners do not hang round the posts, but as a rule stay on their claims all winter and dig out the frozen gravel. In the summer they wash out the "pay dirt" so that the long winter is not a season of enforced idleness, but of preparation.

Official reports show that in the south there is good placer mining, and coarse gold is found on the Teslinto (Hootalinqua). The principal work of the last two years has been around Forty-mile Creek and Sixty-mile Creek, and among the richest of the tributaries of the latter are Miller Creek and Glacier Creek. One claim on Miller Creek yielded \$75,000 to \$80,000 in the summer of 1896. Paying gold-diggings are being worked on the Stewart and many other of the interior rivers, and every creek for three hundred miles shows signs of gold.

In August, 1896, very rich deposits of "coarse gold" were found on the Klondike or Deer river, a stream which falls into the Yukon a few miles above Fort Reliance. One of the tributaries was named by the miners "Bonanza Creek," but all the creeks on both sides of the Klondike give most promising prospects. The miners are flocking there, and the officer in charge reported in December, 1896, that it is beyond doubt that three pans yielded respectively, \$204, \$212, and \$216.



FORTY-MILE CREEK AND TOWN.

These were, of course, very exceptional, but they indicate the productiveness of the locality.

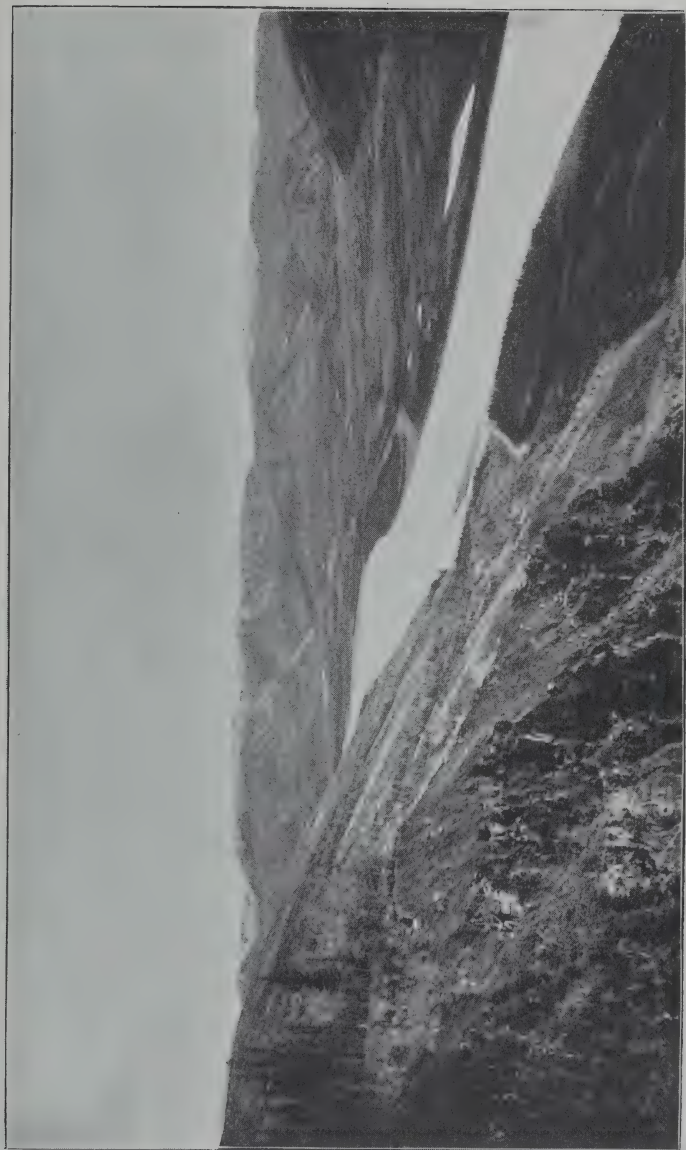
Nothing has been done in quartz prospecting, and nothing probably will be done until access to the country is easier, but gold-bearing quartz is found in many places. Cone Hill, about two miles from Cudahy, consists almost entirely of metalliferous rock richer in gold than the celebrated Treadwell mine. By the time placer mining is exhausted the country will be opened up by a railway from one of the British Columbia rivers, and quartz mining will begin. All these matters are so recent, and the country is so new, that the official reports are read with the interest of new discoveries.

Coal

It is now beyond doubt that there is abundance of coal in the very heart of the gold-mining region. Seven miles up Coal Creek, not far from Cudahy, an extensive seam 12 ft. 6 in. thick has been found. Over 200,000 tons are in sight there of a good quality of lignite. About 30 miles from Cudahy, seams 5 ft. 4 in. and 6 ft. have been found, as well as on the Klondike and at other places along the Yukon. In view of the severity of the winters, this is most important, for it would add enormously to the cost of winning the gold if fuel had to be imported.

Climate

While the mountains protect the country from the incessant downpour of the coast region, the climate has the disadvantage of being very cold in winter, though dry. The readings of the thermometer at Cudahy in the winter of 1895-96 several times were far below -50° and once



COAL CREEK.

touched -63° . From -40° to -50° was quite common. The miners have a ready way of testing the temperature by putting a bottle of mercury outside, and if it freezes they remain indoors. In clearing away the site of the fort at Cudahy the men of the detachment of North-west police had to tear up moss from one to three feet thick, and underneath it they found ground covered by clear white ice. The ground quickly thawed and dried on exposure to the sun, for the summers are warm during the long northern day, and there is very little rain in summer excepting during thunder showers. In looking over the reports for facts indicative of the climate, it appears that the ice broke up on the Yukon at Cudahy on May 17, 1896, and it was considered unusually late. By the middle of September the river was again full of floating ice. That gives a summer of four months. Again we find the surveyors could not travel in the middle of April of the same year, excepting early in the morning and late in the evening, because the water was running in the creeks. We find, again, that boundary surveyors were out on snowshoes working in the field from February to May and in October and November, and that their work stopped for two or two and a half months, not because of the cold, but because of the darkness of the short days of midwinter. But the cold is nevertheless very great, for Mr. Ogilvie reports that on January 8, 1896, the thermometer registered -63° , and that it fell once in the night to -68° . The cold experienced by Arctic explorers has not been so severe as this, and the only way to account for the comparative ease with which the miners support such low temperatures is because of the dryness of the air.

Now that the town has been ascertained to be on Canadian territory, the name Forty-mile Creek will

probably be changed for a more appropriate one. The new fort is called Fort Constantine, from the name of the officer who built it. Bishop Bompas has Anglican mission posts and schools at Buxton (Cudahy), at Old Fort Selkirk, and at Rampart House on the upper waters of the Porcupine.

Discovery

It is to the officers of the Hudson's Bay Company that the credit is due of discovering and opening up this region. The estuary of the river was explored by the Russians in the years 1835-38, but the whole interior remained an absolute blank on the map. In the spring of 1840 Mr. Robert Campbell was sent up the Liard to seek for some stream flowing west to the Pacific. He reached its source in two lakes. The first he named Frances, and the second Finlayson Lake. He then crossed to the Pelly river, which he named. In 1843 he went down the Pelly to the junction of another river, which he named the Lewes; and, in 1847, Fort Selkirk was built at the confluence. While Campbell was establishing posts on these rivers, Mr. James Bell had discovered and was exploring the Porcupine. In 1847 he descended it to its mouth, and came upon the great river which he named the Yukon. He built in that year Fort Yukon at the confluence; and three years later, Campbell went down the Pelly to its junction with the Yukon. He named the White river from its colour, and the Stewart river for a friend. Most of these names are names of people well known in Canada at the time. Hudson's Bay traders then followed down the main river from Fort Yukon past the Tanana river long before any Russian trader ascended it. The information thus obtained was communicated and embodied in published

maps. It will therefore appear that Messrs. Campbell and Bell not only discovered but named and published the names of all these streams, and conducted business on their banks long before the Russians had gone any considerable distance beyond the estuary. The Russian name for the Yukon was Kwich-Pak. To change these names is not only unjust to the original explorers, but also confuses the geographical history of the country. The St. Lawrence has many names by which its progressive discovery may be traced, and so has the Mackenzie. In like manner, in the far north, Smith Sound, Kennedy Channel, and Robeson Channel mark steps in discovery from 1616 to 1871; and, although it is one continuous strait, any attempt to apply Sir Thomas Smith's name to Captain Hall's discovery would be resented by Hall's fellow-countrymen. The same usage obtains throughout all Polar voyages, and there seems no adequate reason for interfering further with Mr. Robert Campbell's nomenclature.

NOTE TO CHAPTER XVII

The best accounts of the Yukon district will be found in the following publications:—

DAWSON, G. M.

Report on an exploration in the Yukon district, N.W.T. and adjacent northern part of British Columbia, 1888.

McCONNELL, R. G.

Report on the Yukon and Mackenzie river districts, 1889.

The above are publications of the Geological Survey. The annual reports of the Department of the Interior contain the communications of Mr. William Ogilvie, and those of the Department of Mounted Police contain the letters of Inspector Constantine to his chief.

OGILVIE, WILLIAM.

Exploratory Survey of part of the Lewes, Tat-on-duc, Porcupine, Bell, Trout, Peel and Mackenzie rivers in 1887-88. Ottawa, 1890.

The following book by an English traveller contains much valuable information :—

PIKE, WAREBURTON.

Through the Sub-Arctic Forest ; a record of a Canoe Voyage from Fort Wrangel to the Pelly lakes and down the Yukon river to the Behring sea. London, Edwin Arnold, 1896.

There is also a handy little guide-book for the use of prospective miners.

WILSON, V.

Guide to the Yukon Gold-fields ; where they are, and how to find them. Seattle, 1896.

CHAPTER XVIII

THE DISTRICT OF KEEWATIN AND THE BARREN GROUNDS

THE district of Keewatin is, under the existing law, bounded on the south partly by Mânitoba and partly by the projection of the district of Saskatchewan, which reaches eastwards to the Nelson river. Its western boundary is very nearly the 100th meridian to the Arctic coast—to be precise it is the meridian passing through the northern end of Mossy portage. On the east the boundary follows the western shore of Hudson's Bay from the extreme north of Canada southwards to a point near Fort Churchill, where the meridian of the dividing line between Manitoba and Ontario touches the bay. That meridian is the remainder of the eastern boundary. The upper part of Lake Winnipeg is at the extreme south of Keewatin, and the extreme north is the utmost north of Canada. Practically it may be conceived to be, in a general way, a narrow stretch of territory along the western shore of Hudson's Bay extending towards the watershed of the Mackenzie river, and including on the north the lower part of the Great Fish river, and on the south, the lower part of the Churchill and the greater part of the Nelson rivers.

It will be convenient to consider this immense territory in two divisions—the southern, south of a line

drawn westwards from the shore of Hudson's Bay a little north of Fort Churchill about lat. 60°, this will approximately include the basin of the lower Churchill—and the northern, which consists of the greater part of the area vaguely known as "The Barren Grounds."

The Churchill Valley

The Churchill river, known also by the names of English river and Missinibi river, is an important stream about 1100 miles long. Its head-waters are very close to affluents of the Saskatchewan and Athabasca. Beaver Lake, one of the sources of the Beaver river, a main tributary of the Churchill, is within a few miles of Lake la Biche, which discharges into the Athabasca; and the south Beaver river rises within 40 miles of Edmonton and close to the White Earth river falling into the Saskatchewan. The Churchill was the main highway to the North-west of the fur-trading companies; and from Fort Cumberland on the lower Saskatchewan the brigades of canoes went up the Grass river to Frog portage, only 380 yards across, to the main Churchill. From thence the route followed the Churchill up to its source in Methy Lake and passed over into the Clearwater river which falls into the Athabasca below the Grand Rapids. This key-point of the far west is $12\frac{1}{4}$ miles across and is known as "the long portage," "Methy portage," or "Portage la Loche." References to it are met with continually in all books of North-west travel.

The valley of the Churchill is wooded throughout its whole length, so that there is no great extent of prairie on its banks. The soil is good as far as Lake à la Crosse where the river enters the great Laurentian area. From thence like other Laurentian streams it flows on the

surface of the country—a clear stream spreading into countless lake expanses, full of fish and the resort of myriads of wild fowl. The wooded country on its banks abounds in moose and deer. One of the chief tributaries from the north is the Reindeer river. The ultimate source of that stream is Wollaston Lake—a beautifully clear body of water, 800 square miles in extent, discharging by two outlets—to the north by the Stone river into the extreme eastern arm of Lake Athabasca, and to the south-east by the Cochrane river into Reindeer Lake—a large lake 135 miles long. This lake discharges into the Churchill by the Reindeer river, and a good canoe route to Lake Athabasca passes that way. From Black Lake at the northern end of this route there is a portage leading to the Doobaunt river, and through the centre of the Barren Grounds to Hudson's Bay.

Owing to the fact of it being the main canoe route to the Mackenzie valley, the Churchill has been described by nearly all the great North-west travellers, Sir Alexander Mackenzie, Sir John Franklin, Sir John Richardson, and Sir George Back, but beyond the chief portage routes the country is very little known. Mr. J. B. Tyrrell of the Geological Survey, explored in 1892-93 the region between the river and Lake Athabasca, and his report has been published only this year. The whole country is without inhabitants save scattered bands of Chipewyan Indians, and as it has been incidentally noticed in previous chapters, no further description seems to be necessary in this place.

The Barren Grounds

This is a region west of Hudson's Bay, of which the northern portion of the provisional territory of Keewatin forms a part, and concerning which very little is actually

known. It is in the main a treeless wilderness—a region of rock and swamp permeated by lakes and streams, upon whose barren shores nature assumes her most unattractive aspect, and where winter seems almost permanently enthroned. It is not an inviting region to the traveller; for in winter it is probably colder than anywhere else on the continent, and in summer the flies, mosquitoes, black flies, and “bull dogs,” make up in activity for the shortness of their season.

If a line be drawn westwards from the western shore of Hudson's Bay, north of Fort Churchill, along the 60th parallel of latitude, and curve to the north-west to cut off the eastern arm of Great Slave Lake; if it be continued northwards through Great Bear Lake, and from thence down the Lockart and Anderson rivers to the Polar Sea, such a line will approximately inclose the Barren Grounds, for the other boundaries will be the Arctic Ocean to the north, and Hudson's Bay to the east. It includes, in general terms, the river valleys east of the Mackenzie, which discharge direct into the Arctic Ocean, and those north of the Churchill, which discharge into Hudson's Bay. It is the true Arctic basin of Canada, and is vaguely reputed to cover 200,000 square miles in area.

It should not, however, be supposed that the entire region so marked off is absolutely bare of trees, for in places where there may be shelter, or where the soil may be drier, trees will be found in groves and clumps. On the shores of the larger lakes there may also be trees, and the tree line will advance or retreat from the limits above described according to varying local circumstances. Thus, in the Tyrrell expedition of 1893, a grove of white spruce, composed of trees eight feet in circumference, was met in the heart of the Barren Grounds in lat. $62^{\circ} 15'$,

and the same expedition records an undulating grassy plain as observed on the Doobaunt river about 64° north latitude. Clumps of willows were met on the Doobaunt, and the rivers to the west brought down trunks of spruce trees one foot in diameter, proving that the interior is not so treeless as is supposed. But on the other hand, Doobaunt Lake was found on August 7, covered with an immense sheet of ice seven feet thick. The explorers paddled between the ice and the shore save at one spot where the ice was firm, and they had to portage over it.

The Barren Grounds drain mostly to the north by the Coppermine and the Great Fish (Back's) rivers, both difficult to navigate even in canoes, consisting of strings of lakes connected by violent rapids, and flowing for the most parts in rocky channels. There are other rivers flowing into the Arctic Ocean and into Hudson's Bay. Of the latter the Doobaunt is the largest, falling into Baker Lake—a continuation of Chesterfield Inlet. Little is known of the land away from the main watercourses, for Samuel Hearne is the only white man who traversed it on foot. He saw a range of mountains—the Copper mountains—and they have been described by Dr. Richardson, who found scales of copper disseminated generally throughout the rock, and picked up plates of native copper, and malachite, copper glance, and native copper and copper ore in many other forms. The Indians report that every part of this range, over an extent of 40 miles, abounds in copper, and Richardson found ice chisels of pure copper 12 and 14 inches long and half an inch in diameter in the possession of the Eskimo.

The area of the Barren Grounds for the most part consists, as is supposed, of Laurentian rocks; but even with our present knowledge, important reservations must be made. The Coppermine river flows through Cambrian

rocks for a large part of its course, and on the shore of the Arctic Ocean the Cambrian extends in a belt westwards from the mouth of that river to meet the Devonian and Cretaceous of the Mackenzie valley, and eastwards along Coronation gulf. Red sandstone and conglomerates with various trappean rocks referred to the Cambrian (and doubtless representing, like the last mentioned, the Keweenaw of the great lakes), have also been found by Mr. Tyrrell along the course of the Doobaunt river, and on Baker's Lake and Chesterfield Inlet. Huronian schists and quartzites also occur in some places, and appear to be highly charged with copper ores.

He found a stretch of 225 miles of these rocks along his route, and he observed their line of contact with the Laurentian gneiss along the Doobaunt river, from where it turns east almost as far as Baker Lake, and he observed, moreover, the same contact on Baker Lake and Chesterfield Inlet. These rocks are doubtless a repetition of the copper-bearing rocks of the Coppermine river, and indicate a very wide extent of metalliferous rocks in this region, otherwise so scantily favoured by nature. From Chesterfield Inlet to Churchill he found, however, the low shores of the bay consisted of Laurentian gneiss; but it is evident that large areas of later formation exist in the interior.

Very little shelter can be found in this region from the winds which sweep across it; nevertheless it is by no means destitute of animal life; immense herds of caribou roam over it, migrating from the shores of the Arctic Ocean in summer to the winter shelter of the woods on the south and west. These are the Barren Ground caribou, practically identical with the Lapland reindeer, and like them they find abundant food in moss

and lichens. Tyrrell met some of these immense herds and was able to get photographs of them, they were so unsuspicious of the destructive nature of white men. The fawns would approach within a few yards of the party. Geese and ducks breed in immense numbers



MUSK-OX.

on these solitary lakes, partridges are found there, and the waters abound in trout and whitefish. The Hudson's Bay officers, in their expeditions do not seem to have suffered such privations as the explorers from Europe. Dr. Rae and Simpson and Dease provided food for their parties from the resources of these regions. On the northern part of the Barren Grounds is the home of the musk-ox, a harmless, inoffensive creature which, as its name *ovibos* indicates, is undecided whether to evolve

itself into a sheep or an ox. It has the teeth of a sheep and the disposition and mental development of a sheep, but the feet of an ox and the horns of an ox. The hide partakes of the same double nature, for there is a thick fleecy undergrowth in winter with a long permanent coat of hair. The picture given is taken from an excellent preserved specimen in the Geological Survey Office in Ottawa.

The first white man to enter the Barren Grounds was Samuel Hearne, who in 1770-71 crossed them to the Coppermine. He was unskilful in scientific observation and did not correctly estimate distances, so there is some difficulty in tracing his route. Franklin, in his first expedition in 1819-21, entered the country from Great Slave Lake. He went up one of its tributaries, the Yellowknife river, and built Fort Enterprise of timber growing around. The following year, with his companions Back and Richardson, he crossed the divide and went down the Coppermine through the Barren Grounds. He returned by Hood river to the Coppermine, experiencing extreme privations and disasters. The next to pass through was Captain Back in 1833-34 in the search for Ross. He also entered by Great Slave Lake, built Fort Reliance at its extreme eastern end, and went down by the Great Fish (or Back's) river to the sea, thus passing through the heart of the Barren Grounds. Simpson and Dease in 1837 built Fort Confidence at the north-east corner of Great Bear Lake, and, from that point in the north of the Barren Grounds as a centre, made most successful explorations. They found abundance of game and fish; but they were Hudson's Bay officers and used to the country. They also went down to the sea by the lower Coppermine. The same point Fort Confidence was, in 1848-49, made the starting-point of Richardson

and Rae's expedition in search of Sir John Franklin and again the Coppermine was followed to the sea. In 1850-51 Dr. Rae again wintered at Fort Enterprise and went down on foot to the sea in carrying out a further search under the orders of the Hudson's Bay Company. The next traverse of the Barren Grounds was made by James Anderson, a Hudson's Bay officer; he went down by the Great Fish river. Father Petitot, who spent many years as a missionary on the lower Mackenzie, has visited that part of the Barren Grounds between Great Bear Lake and the sea. It was on an island at the mouth of the Great Fish river that the last of Franklin's crew perished in 1848.

Of recent years renewed interest has arisen concerning the Barren Grounds; not in the cause of science but because of an insatiable longing to shoot the harmless musk-oxen which are one of the few means of support of the Indians of that region. Mr. Warburton Pike has written a very good book giving an account of his experiences in 1889. He was on the head waters both of the Coppermine and Great Fish rivers in the heart of the Barren Grounds. It is worthy of note that he found the edge of the woods to be at Lake Mackay, north of Great Slave Lake (about long. 112°), on the height of land between the lake and the ocean.

In 1893 the Geological Survey of Canada sent Mr. J. B. Tyrrell to explore this region. He entered by way of Lake Athabasca, and from its eastern extremity to Black Lake, and from thence north-eastward across the divide to Hudson's Bay. It was at the height of land that he also left the forest; for there he saw poplar for the last time but he did not finally leave behind the scattered and intermittent clumps of spruce until he was 50 miles beyond the water-parting. Daly Lake at the divide is

1290 feet above the sea, and the portage across is only $1\frac{1}{4}$ mile. Following, to the north-east, a chain of lakes and streams he came, on August 7, to the great lake before mentioned covered with a field of heavy ice, and he paddled for 117 miles between it and the shore. Very near there he met Eskimo and he followed down the outlet of the lake to Baker Lake at the head of Chesterfield Inlet of Hudson's Bay. This route passed through the centre of the Barren Grounds. He describes the open country as consisting in many places of mossy plains where the ground is not thawed on the surface in July, and the ice is protected by the moss from the influence of the sun. Trees cannot grow under such circumstances. In 1894 he entered from the south by Reindeer Lake, and again left the forest near the water-parting of the Churchill. Mr. Caspar Whitney has also followed the musk-oxen to their homes, and has given his experience in a recent volume.

This region at the south and south-west is the hunting ground of the Yellowknives and Dogribs, tribes of Chipewyan stock, and the Eskimo wander into the interior from the Hudson's Bay and Arctic coasts almost up to the height of land. These tribes live by fishing, and upon the caribou, and by hunting the musk-oxen for their skins.

The Canadian Parliament has passed very stringent laws to protect the game in these far northern regions from the incursions of those who go there for mere destruction. The Indians depend solely for existence on these wild creatures, and must perish by starvation if civilised men are allowed to go into the country to kill off the game.

The district of Keewatin, of which the Barren Grounds form the north part, is entirely unsettled, excepting the few

persons at the Hudson's Bay posts, and it is roamed over by Eskimo, Chipewyans, and, at the extreme south, by Algonquins. The lieutenant-governor of Manitoba is governor of the whole provisional district. Not a single crime of a serious nature was committed in this whole territory during the seven years' term of the late governor. The whole district of Keewatin is 282,000 square miles in area. The main fact concerning the Barren Grounds at the north seems to be that east of the Mackenzie basin and north of the drainage of the Churchill the water-parting is elevated, and the land facing the Arctic Ocean and the northern part of Hudson's Bay is exposed to the full sweep of the winds from the north.

NOTE TO CHAPTER XVIII

The following will be found useful for additional information on the subject of this chapter :—

PIKE, WARBURTON.

Barren Grounds of Northern Canada. London, Macmillan, 1892.

TYRRELL, J. B.

An Expedition through the Barren Lands of Northern Canada. *Geographical Journal*, London, vol. iv. No. 5, November 1894, pp. 437-450.

A Second Expedition through the Barren Lands of Northern Canada. *Geographical Journal*, London, vol. vi. No. 5, November 1895, pp. 438-448.

TYRRELL, J. W.

Through the sub-Arctics of Canada, in the *Canadian Magazine* for 1896, Toronto.

WHITNEY, CASPAR W.

On Snow-shoes to the Barren Grounds, New York. Harper, 1896.

The following reports of the Geological Survey relate to this region :—

KEEWATIN.

R. Bell, 1878-79, 1880-86. A. S. Cochrane, 1879. A. P. Low, 1886. D. B. Dowling, 1894. J. B. Tyrrell, 1894-95.

CHAPTER XIX

ARCTIC CANADA

The Coast

DEMARCATIION Point, on the 141st meridian of west longitude, is the western point of Canada on the Arctic Ocean. The boundary separating it from Alaska runs south along that meridian until it strikes the summit of the Coast range. Demarcation Point is 145 miles west of the mouth of the Mackenzie river. Thirty miles west of the general course of the lower Mackenzie the last spurs of the Rocky Mountains close in the valley. East of these mountains the whole interior of the continent slopes with a very gentle incline down to the Arctic Ocean, so that there is an uninterrupted stretch of steamboat navigation, from the mouth of the Mackenzie river, of 1118 miles, to Great Slave Lake, which is only 391 feet above the sea.

The continental coast-line of Canada on the Arctic Ocean follows approximately the parallel of 70° north latitude; Bellot Strait, in lat. 72° , at the end of the projecting peninsula of Boothia, marks the most northerly point of the mainland. The coast is uniformly low, and is bordered by low cliffs of frozen clay and sand, or eastwards as far as Coronation gulf by flat limestones. It may be a melancholy coast, but it is not a storm-beaten

one, for the masses of ice to the north, never very far distant and always ready to close down with a strong wind, protect the coast from such tremendous surges as batter Labrador with the gathered momentum of 2000 miles of ocean.

North of the continent is the immense Arctic archipelago, forming part of the Dominion and included in the provisional district of Franklin, laid down on the maps under various names—the more northern islands as the Parry Islands, and those nearest the coast as Banks Land, Prince Albert Land, Wollaston Land, Victoria Land, King William Land, Prince of Wales Land, North Somerset. These two groups of islands are separated by a continuous broad passage called, in succession from the west, M'Clure Strait, Melville Sound, Barrow Strait, and Lancaster Sound, which last opens into Baffin Bay. South from Barrow Strait Prince Regent Inlet leads into the far-reaching Gulf of Boothia down to Rae's Isthmus, only 40 miles across to Hudson's Bay. An almost continuous chain of lakes extends across this isthmus and barely fails to cut off Melville Peninsula from the mainland. Half way down the Gulf of Boothia, and precisely at 70° north latitude, Fury and Hecla Strait leads into Fox Channel of Hudson's Bay. An immense unexplored territory lies north of Hudson's Strait, undefined on its western coast upon the Gulf of Boothia and Fox Channel. It extends on the north to Lancaster Sound, and is bounded on the east by Davis Strait and Baffin Bay. Although of late years the name Baffin Land has been extended over the whole region, it is laid down on the maps under various names, as Meta Incognita, Fox Land, Baffin Land, Cockburn Land. North of all these, and stretching up toward the North Pole, are the lands upon the western shores of Smith Sound, Kennedy Channel, Hall Basin, and Robe-

son Channel, leading to the Palæocrystic Sea of Nares's expedition. These lands are named Ellesmere Land and Grinnell Land. In their rear is the absolutely unknown. In Nares's expedition of 1875-76 Lieutenant Aldrich conducted a sledging party along the northern edge of this awful desolation as far as long. 86° W. and lat. $82^{\circ} 16'$. The point he reached he called Cape Alfred Ernest; it is 220 miles further than any previous explorer had attained. Near the coast he saw a range of mountains 1000 to 5000 feet high, which are called the Challenger mountains. These mountains, then, are the northernmost part of Canada.

A glance at the map will show that only along the eastern half of the northern coast of the mainland have islands or lands to the north been discovered. From long. 125° , near Cape Bathurst, westward to the longitude of Behring Strait no land has been seen. An impenetrable ice pack has prevented all discovery. This region is called on the Admiralty charts Beaufort Sea, and it is as impenetrable from the east, by way of Lancaster Sound, as it is from the south, by way of Behring Strait. Parry in 1819 found the western end of Banks (M'Clure) Strait blocked up with ice of far greater thickness than he had ever met before. It was from 40 to 100 feet thick, and, after narrowly escaping the loss of his ships, he was compelled to return.

The ice of the Polar Sea north of America is more formidable than that in the Spitzbergen Sea. It is probably entangled in an archipelago extending far to the north. It does not consist of bergs, the product of glaciers, but of immense fields of hard, blue ice, sometimes four miles in diameter, with hummocks twenty to forty feet high and welded by the winds into packs of immense extent. In this way the polar ice pack pro-

bably extends over all the Arctic Sea, opening out in summer more or less into lanes or areas of open water as the detached packs are separated or closed up by the influences of winds or currents.

A current of warmer water, corresponding to the extreme northern branch of the Gulf Stream of the Atlantic, flows northwards through Behring Strait at the rate of two miles an hour. The influence of the earth's rotation gives it also an eastern direction, so that while Kotzebue and Norton Sounds on the American coast are full of drift wood there is none on the Asiatic side, and while the water at Prince of Wales Cape in America may be 53° that on East Cape in Asia will be 35° . Although this north-easterly current is impeded by the long chain of the Aleutian Islands and the narrowness of the strait, it curves into Behring Sea by the wider opening on the west and follows the trend of the American coast, and is the cause of a well-ascertained current eastward in the Arctic Sea.

The outlets for the heavy ice in the Polar Sea—the palæocrystic sea of Nares, and the dense pack encountered by Parry—the sea of ancient ice as it is sometimes called, are small on both sides of the American continent. Behring Strait is very shallow. Over its whole extent there is an even depth of only $19\frac{1}{2}$ fathoms. On the east, Robeson Channel and Lancaster Sound are insufficient outlets for so wide an area of ice, and the strait into Hudson's Bay is very narrow, so that the portion of the Arctic Ocean under consideration is a basin for the accumulation of ice which does not drift away to warmer latitudes but decreases chiefly by melting in summer and by evaporation. There are doubtless many local conditions affecting the tides of the polar sea. Parry records a tide of 2 feet 7 inches at Winter Harbour on Melville

Island, but at Point Barrow it is only 0·7 feet. Franklin observed 2 feet at the mouth of the Mackenzie, but only 10 inches at Cape Simpson. Dease noticed 15 inches and, at the mouth of Back river, 12 inches. At the mouth of the Coppermine river it was 20 inches. In other places it was scarcely noticeable. The influence of the tide in breaking up large masses of ice is enormous, and where the movement of the tides is so feeble it is not surprising that the ice presents such an impenetrable barrier to a north-west passage. There is, however, a tide, impeded though it be by the shape of the coast, from each ocean, and the tidal waves from east and west would seem to meet about the end of M'Clure Strait, which may explain the impenetrable pack found there by all explorers from Parry down. The general set of the currents is eastward, for the *Resolute* drifted east from this region out of Lancaster Sound. It would therefore seem to be the fact that this current eastward from Behring Sea controls the movement of the permanent pack north of the American continent, and packs the ice in the Beaufort Sea, so that while $83^{\circ} 24' N.$ has been reached by way of Smith Sound, and $86^{\circ} 14' N.$ lat. by the Spitzbergen Sea, the parallel of $74^{\circ} N.$ has not been attained north of the western part of the American continent.

In the summer, when the long Arctic day loosens the grip of the ice-pack upon the coast, the influence of the warmer water of the Pacific current prevails along the shore, and this is aided by the flush of the melting ice in the great Mackenzie river, and by the drainage of the whole Arctic watershed. These influences combine with prevailing southerly winds to move the ice-pack away from the coast and create a passage of navigable water for a greater or lesser breadth along the shore. Captain Collinson

sailed along this in 1852 as far as Cambridge Bay at 105° W., and Sir John Franklin, in his last expedition, brought the *Erebus* and *Terror* as far as $98^{\circ} 41'$ W., both points being close to the latitude of 69° N., so that, on that parallel, the north-west passage has been made by sea excepting a gap of about 150 miles. It may be conceived as possible that, under exceptionally favourable circumstances, a steam vessel might follow Franklin's track and get through this gap into the water off the continental shore, and so pass through by Collinson's track westward to Behring Strait. The ice to the west of Melville Sound on the parallel of 75° is reported by Parry and all subsequent explorers to be compact and immovable, and unaffected by the east wind, therefore the north-west passage, if ever made, will doubtless be along the coast of the continent.

The width of the open lane of water off the coast is very uncertain and depends upon the wind. The pack may be out of sight to the north, and on a change of wind might close down on the shore, or the wind might clear away one prominent headland and block another. The pack is seldom far away, and for the most part of the year the southern edge extends in an arch from Point Barrow to Cape North in Siberia. The season for navigating the Polar Sea off the mouth of the Mackenzie is from the beginning of July to the middle of September, at which time the young ice begins to form.

The Polar ocean has been shown to be very shallow, so far as known, on the American side. In 1850 the *Enterprise* followed up a lead in the pack for 100 miles north of Point Barrow, and found only 45 fathoms. The most frequent depths recorded range from 15 to 30 fathoms, and although places have been reported where no bottom was found at 60 and even at 140 fathoms,

the soundings indicate a very shallow sea with a muddy bottom.

Robeson Channel also, leading into Smith Sound, is very shallow, so that a fall in the ocean level of 100 fathoms would certainly make an inclosed basin of the Arctic Ocean, or rather a basin opening only on the Spitzbergen side upon a very deep ocean.

The soundings off the Siberian coast as far as known are also shallow. The drainage of half of North America and Asia pours into the Arctic basin on that side, and the main overflow from the circumpolar ocean is into the deep Spitzbergen Sea, and thence by the current to the south-west on the eastern side of Greenland. Nansen's observations confirm this, and tend to establish the belief that the permanent ice-pack which is entangled among islands north of the American continent in a comparatively shallow ocean breaks away into Spitzbergen Sea and flows south by the Greenland current. The current which carried Nansen to the north-west would be the return of the Gulf Stream, its eastward momentum being exhausted, in the overflow, which becomes a south-west current along the Greenland coast.

It was observed by Beechey, in the *Blossom*, as early as 1826, and was laid down by Parry as a canon in Arctic navigation, that the margins of ice-packs between America and Asia, and Europe and Greenland, lie as nearly as possible in the same direction, viz., south-west and north-east, and that therefore navigation on the western shore is impeded by ice to a much lower latitude than on the eastern. This seems to be only another illustration of the effect of the earth's rotation upon floating matter passing from a zone of slower to one of swifter rotation, and it has been already noticed in a preceding chapter on the Arctic current. Hence it has now

become a maxim of Arctic navigation to creep up north along the eastern side of an ice-pack.

Returning now to the continental shore at the westernmost point of Canada—the coast of Alaska west of 141° W. (Demarcation Point) has been described also as low, with low cliffs of frozen clay and sand. Point Barrow in Alaska is low, and the northern ice-pack rests against it for the greater part of the year. Not far inland a chain of mountains of moderate height follows the outline of the coast. Eastwards of Point Barrow the coast is also low. At Herschell Island, where the coast commences to trend to the south-east to form Mackenzie Bay, is an excellent harbour with good anchorage suitable for a winter harbour, and the best shelter-harbour along the whole extent of the Arctic coast.

Mackenzie Bay is 160 miles across from headland to headland, with an average depth of 25 fathoms. Into it the river Mackenzie discharges with a great volume through an immense and complex delta. This river with its valley forms the subject of a separate chapter. It is not an Arctic river, for under different names its navigable waters extend for 2000 miles southwards into the heart of the continent.

Eastwards along the Arctic shore from the mouth of the river the coast is still low, consisting of soft rocks of the Cretaceous formation. At Cape Parry is an interruption of Devonian limestone, from whence a long stretch of Cambrian rocks follow along the coast to the eastern end of Coronation Gulf, and Dease's Strait, excepting Cape Barrow, which is Laurentian. This part of the coast is bold and high. The Coppermine river falls into Coronation Gulf, and in the interior are the Copper Mountains, which abound in ores of green malachite and in native copper. This region was discovered by Hearne in 1771,

who was led thither by the reports of the Eskimo and the specimens of native copper they showed. Cape Barrow is the apex of a Laurentian area projecting into the Cambrian, and is a cliff 1500 feet high.

The Barren Grounds

Behind all these coast areas of later rock lies the mass of crystalline rock forming the core of the continent. From the eastern end of Dease's Strait and eastwards to the Atlantic the Laurentian comes out upon the coast. The great promontories of Boothia and of Melville peninsula are, so far as known, of this formation, excepting a few small detached areas of Silurian or Devonian. The coast along the Polar Ocean is nearly in its whole length low and rocky. It is the northern shore of the Barren Grounds—a region sacred to the musk-ox and reindeer. Back's, or the Great Fish, river flows through it. Like the Coppermine, the only other large river of this part of Canada, it flows through a region of low tumbled hills and of morasses and lakes, with rapids and rocks which render it unnavigable. On Montreal Island, at the mouth of this river of desolation, the tragedy of the last Franklin expedition closed—the last survivors of the retreating party led by Crozier and Fitzjames dropped dead of hunger one by one in their tracks, and the ice and darkness concealed their fate during many weary years of heroic effort for their relief and of search for their traces.

The Archipelago

As before observed, north of the continental mass lies a great archipelago, the most northern range of which is called after Parry, who discovered it. All these islands

consist geologically of late formations from Silurian to Carboniferous, and on the western sides of Banks Land and Prince Patrick Land, Miocene fossils have been found. All along the coasts of Melville Sound and M'Clure Strait, at the very knot of the north-west passage, are abundant deposits of bituminous coal close to the great barrier of immovable ice which shut out the adventurous Parry from farther progress. Fragments of coal may be picked up along the continental coast westwards as far as Icy Cape, and the Eskimo often use it for making lip ornaments as well as for making fires.

On the Atlantic side Baffin Land is for the most part Laurentian, and Laurentian rocks continue from Hudson's Strait along the coast of Baffin Bay and Smith Sound. In Grinnell Land there is a large mass of Cambrian rocks stretching up along Robeson Channel to the Palæocrystic sea.

The coasts of these far-northern islands are high and often precipitous. Parry wintered on Melville Island and kept his crews in good health. He describes the soil as rich, and, in the short summer, vegetation was abundant. Game was plentiful—musk-ox, reindeer, hares, grouse, geese, ducks, and ptarmigan were abundant. Collinson found ptarmigan plentiful at Cambridge Bay, where he wintered in 1852-53, and there were deer in large herds crossing on the ice to the mainland. From the records of Arctic voyages it would seem that the cold is not so great on the islands as on the mainland.

Stern and repellant though nature may be in these far-northern latitudes, the Arctic seas have yet a life of their own. There the great marine animals increase and multiply unmolested—whales, walruses, and seals. Trout and salmon are in the streams and lakes, on the land are musk-oxen and reindeer, and on the bays

and inland waters ducks and geese innumerable in their season find their breeding-places. The seal is to the Eskimo what the buffalo was to the Indian of the prairies, and upon its fat and flesh he is abundantly nourished.

It would seem, however, that these creatures are uncertain in their migrations, for in the region where Crozier perished of hunger Simpson had found abundance of game. Whaling-ships are now pressing in from Behring Strait on the west and up into Fox Channel from Hudson's Bay on the east, and with bomb-lances are destroying and frightening away the timid monsters into the farthest north. Nothing can escape the wasteful activity of civilised man with his scientific weapons of destruction.

The Eskimo

Nor are these regions without human inhabitants. From Arctic Siberia to Labrador and Greenland, along 5000 miles of coast wander that interesting race known in the language of their Indian enemies as Eskimo, or raw-meat eaters, but in their own tongue as Innuits or human beings. This people speaks but one language over all its wide extent of dispersion, so that a Greenland Eskimo will serve as interpreter to his people on Hudson's Bay or the Siberian coast. From lat. 60° N. to the farthest north yet reached scattered families have been met, clinging with affection to their icy coasts, and living in apparent plenty, as their sturdy and podgy figures testify, in spite of the terrible cold. Parry found their huts on Melville Island and on Byam Martin's Island, and speaks well of the peaceful disposition of those he met. He says their voices are soft, and they are fond of singing and drawing. They have generally

been ready to assist rather than molest Arctic expeditions. They have excellent notions of geography, and when pencil and paper were supplied they would draw maps which have been of great use to explorers. Where the Moravian missionaries on the Labrador coast have gathered them in communities, they delight to sing hymns translated into their own tongue by the devoted brethren. A brave and kindly people, they wrest their subsistence from nature in her most stern and cruel moods, navigating in skin canoes the stormiest seas, and overcoming, with their primitive weapons of bone, the great monsters—whales, polar bears, walruses, seals—on which they live. They have learned to support themselves under circumstances which have compelled many explorers to succumb though aided by all the resources of civilisation. They are not cleanly, and washing is unknown, for the intense cold burns the exposed skin like fire; but people who can flourish in such a climate cannot want for intelligence, and as for morality they have not much to learn from civilisation. In stature they are not over middle height, they are strong and active, their hands and feet are small, their noses are flat, and their cheeks are fat and projecting. They are tremendous eaters, and delight in whale blubber and the fatty flesh of seals, which they do not require to cook. Altogether, then, though in intellect, morals, good nature, and courage these Eskimo are not to be despised, their habits with regard to cooking and cleanliness are not by any means worthy of commendation.

Present Divisions

In the year 1895 the Canadian Government divided up and named all the unorganised territory on the north

and west. The Arctic archipelago with the projecting peninsulas and all the regions of the uttermost north were named *Franklin*, in memory of the gallant and gentle sailor who perished in its wastes. Those uninviting and dreary regions of Arctic Canada will ever be classic for the deeds of devotion and heroism which have been wrought there. Three distinct problems have been attempted in that perilous land—the search for the north-west passage, the quest to learn the fate of Sir John Franklin, and the struggle to reach the uttermost pole. The two first are solved, the last is still the passion of the nations of the English, Scandinavian, and German races—the knight-errantry of practical mercantile people.

Arctic Exploration

The efforts to solve these problems by way of Hudson's Bay are noticed in another chapter, and a short sketch of the chief attempts made in other directions along the northern coast is necessary in any account of Arctic Canada.

The search for the north-west passage was resumed in 1818, when the Admiralty sent an expedition under Captain John Ross with the *Isabella* and *Alexander*. His highest point was $76^{\circ} 54'$, not so far as Baffin had attained ($77^{\circ} 45'$) in 1616; but he hastily concluded there was no opening to the north, and, turning, he coasted along the west side of Baffin Bay to Lancaster Sound, which he attempted to penetrate. There he was on the threshold of the north-west passage; but on sailing up for fifty miles his farther progress was arrested by ice, and he fancied he saw a range of mountains closing in round the head of what he rashly assumed to be a bay. He named these cloud mountains the Croker

Mountains, and returned home, to the great disappointment of the Admiralty and of Lieutenant Parry in charge of the *Alexander*, his second in command. The next year Parry was sent with the *Hecla* and *Griper*. He sailed through Lancaster Sound, through Barrow Strait, through Melville Sound, into M'Clure Strait, and discovered the islands on the north since called the Parry Islands, and Cockburn, Prince of Wales, and Banks Lands on the south. He wintered at Winter Harbour, on the south-east coast of Melville Island, whence he explored the adjacent country by sledging parties. The following summer he vainly endeavoured to penetrate the barrier of immovable ice which closed in M'Clure Strait, but the farthest point attained was 114° west longitude. After narrowly escaping the loss of both ships in the ice, he returned to England, where he was received with enthusiasm.

Parry's second expedition in 1821 was an attempt to flank the impenetrable ice-pack by the south. He made the attempt by Hudson's Bay, as related in another chapter. In 1824 he sailed again with the *Hecla* and *Fury*, and he entered by Lancaster Sound and sought to turn the flank of the ice-pack by passing to the south through Prince Regent Inlet, but the conditions of the season were against him. He wintered at Port Bowen, not as far west as he had sailed on his first voyage, and the following summer, after protracted struggles with storm and ice, he lost the *Fury* on Fury Point in Prince Regent Inlet and returned home in the *Hecla* in 1825. This closed Parry's efforts on the American side of the Arctic sea.

Ross, who chafed under his failure of 1819, again took up the quest, and, in 1829, he led an expedition in a paddle-steamship—the *Victory*—despatched at the

expense of the Sheriff of London, Felix Booth. He passed five years in the Arctic regions, and was most successful, not only in keeping his crew in health, but in making important discoveries. He lost his vessel, and, after unparalleled experiences, he fell in with the whaling ship *Isabella* and returned home. He, with his nephew James Ross, by sledging parties discovered the Magnetic Pole on the west coast of Boothia, he also discovered Franklin Strait and King William Land, and followed round the whole coast of Boothia and North Somerset but failed to notice Bellot Strait. Ross's operations were in fact around a spot close to the very key of the north-west passage, at the termination of Simpson's discoveries by land, and not far from the point where the crew of the last Franklin expedition abandoned their ships. He explored at the abrupt elbow where the long series of straits and sounds after following the coast eastwards impinge upon the peninsula of Boothia, which projects at a right angle northwards. Ross found the temperature ranging from -31° to -40° , and occasionally as low as -44° and -55° . This was lower than anything recorded by Parry.

In the meanwhile the Admiralty resolved upon connecting the discoveries of Samuel Hearne and Alexander Mackenzie upon the Arctic coast, if haply the desired passage might be found along the shore of the ocean they had seen. In 1819 Franklin was despatched on his first expedition, and then commenced the series of explorations which delimited the northern coast of the continent and the Arctic shores of the Canadian territories recently called Mackenzie and Keewatin. It will be remembered that Hearne was the first to reach the Polar Ocean at the mouth of the Coppermine in 1771, and Mackenzie had subsequently reached it in 1798 at the mouth of the

Mackenzie. Captain Cook had in 1778 passed through Behring Strait and coasted as far eastwards as Icy Cape, and now these three points on the Arctic coast were to be connected link by link with the Atlantic.

Under orders from the Admiralty, Franklin left England in May, 1819, and went by way of Hudson's Bay, York Factory, and Norway House to Cumberland House on the North Saskatchewan. From thence he went in January, 1820, by snow-shoes and sledges to Fort Chipewyan on Lake Athabasca. In July he went on to Great Slave Lake, to old Fort Providence, a post of the North-west Company, and from thence he went up the Yellowknife river 156 miles, where he built a house at Winter Lake and called it Fort Enterprise, and there he had to remain nine months to collect provisions and procure guides. In June, 1821, the expedition started for the Polar Sea, Dr. Richardson in charge of the first party, and Franklin a week later with the rest. They followed down the Coppermine river, 450 miles, to its mouth, and coasted along the shore of the Arctic Sea for 638 miles eastwards. He traced the coast of Coronation Gulf and of Bathurst Inlet to Point Tarnagain, near Cape Flinders, in $109^{\circ} 25' W.$, returning by way of Hood river to Fort Enterprise, which he reached after great privations. In July, 1822, he reached York Factory on his return.

In 1825 Franklin led a second expedition, but by way of Lake Superior and Lake Winnipeg to Cumberland House. Thence he proceeded to Lake Athabasca and down the Mackenzie river to the Polar Sea. Returning thence, he established his headquarters at Fort Franklin, which he built at the outlet of Great Bear Lake. During the summer Dr. Richardson surveyed Great Bear Lake. In June of 1826 Franklin went down the Mackenzie through the most westerly channel to the sea, and turning

west surveyed the coast for 374 miles as far as Return Reef. The plan of the western expedition was that Franklin was to push on westward to Behring Strait, where Captain Beechey in H.M.S. *Blossom* was to await him. Beechey, remaining in the *Blossom* in Kotzebue Sound, sent Elson in a barge along the coast, who succeeded in reaching Point Barrow at the very time Franklin was at Return Reef. Only 160 miles then remained to be discovered west of the Mackenzie.

While Franklin was thus coasting to the west, Richardson started eastwards with two boats down the eastern branch of the Mackenzie delta. He coasted 863 miles to the mouth of the Coppermine river, and thus connected his survey with that of Franklin's first voyage. He passed through a strait named after his boats Dolphin and Union Strait, and discovered a land to the north which he called Wollaston Land. The strait was packed with ice. He returned by a shorter way overland to the north-east angle of Great Bear Lake, and thence to headquarters at Fort Franklin at its outlet, a distance of 433 miles. This closed the second Franklin expedition.

In the meanwhile Ross had been immured in the Polar regions since 1829 and nothing had been heard of him. Captain Back, R.N., was despatched, by public subscription, in the winter of 1832-33 to relieve him or ascertain his fate. He went by way of Montreal along the usual north-west route to Great Slave Lake, and starting from Fort Resolution traced his way to Great Fish river, which he heard of from Richardson, who had heard of it from Eskimo and Indian reports. This river he discovered, and it is sometimes called Back's river. It was too late in the season to proceed, so he returned to Fort Reliance, which he had built at the extreme north-east point of Great Slave Lake. Although he heard here of the safe

return of Ross, he was anxious to bring back some fruits of his expedition, and he went down the Great Fish river and reached Montreal Island at its mouth. Back discovered the land across the ice-encumbered strait and named it King William Land. He returned in 1834.

To the west, then, only 163 miles, from Return Reef to Point Barrow, remained unknown; but east of the Mackenzie were two long gaps—one from Point Tarnagain of Franklin's first expedition to the mouth of Back's river, and the other from the discoveries of Ross at the southern angle of Boothia and the main coast, to the explorations of Parry from Repulse Bay in Hudson's Bay. A small extent of coast, between Cape Britannia, at the mouth of Back's river, and Ross's sledging exploration to King William Land, also remained undiscovered. These points were connected by officers of the Hudson's Bay Company.

It should be stated once for all that on these expeditions officers of the Hudson's Bay Company had co-operated with the commanders whose names are given; but now the company took the matter up, and P. W. Dease and Thomas Simpson, two of its officers, completed the discovery of the Arctic coast. They started from Fort Chipewyan, at the outlet of Athabasca Lake, and on July 9, 1837, reached the mouth of the Mackenzie. They started westwards in boats; but about 50 miles east of Point Barrow they found the ice-pack hard down on the coast. There Dease remained with the boats, and Simpson and five men proceeded on foot on August 1; and on August 4, 1837, just 60 years ago, the discovery of the north coast of America west of the Mackenzie was accomplished. Simpson reached Point Barrow, which Elson of the *Blossom* had reached from Behring Strait in 1826.

These intrepid and skilful explorers on their return established themselves at Fort Confidence, which they built at the discharge of Dease river into the north-west angle of Great Bear Lake, where, by hunting and fishing, they supported their party and collected food for their journeys eastward during the two following years.

In 1823 they started, on June 7, with boats up the Dease river, and hauling them on sledges, passed the height of land into the Coppermine, and arrived at the sea on July 1. They found Coronation Gulf full of ice, and, with great difficulty, reached Cape Flinders on August 9. Finding that the boats could go no farther, Simpson landed and proceeded eastwards as far as Cape Alexander, where he discovered land to the north, which he named Victoria Land, but which was a continuation of Wollaston Land, previously discovered by Richardson. Returning, they coasted King William Land and Victoria Land, and named Wellington and Cambridge Bays, then crossed to the south, ascended the Coppermine, and reached Fort Confidence on September 24. This was the most remarkable series of discoveries made on the Arctic coast.

Little now remained to be discovered, and that was completed by Dr. Rae of the Hudson's Bay Company in 1846, from Repulse Bay in Hudson's Bay as a base. That remarkable explorer was commander, astronomer, and naturalist in one, added to which his skill as a hunter and fisherman was the main support of his small party. Guided by maps drawn by Eskimo, he crossed the isthmus of Melville peninsula (a distance of only 40 miles, covered by an almost continuous chain of lakes, with only twelve miles of portages) and reached the tide water at Committee Bay of the Gulf of Boothia. After explorations on both sides of Committee Bay, he returned

to Fort Hope on Repulse Bay, where he wintered. In April, 1847, he started with dogs and sledges, and on April 16, he completed the survey of the northern coast of the continent by reaching Lord Mayor's Bay (discovered by Sir James Ross), and surveying the lower part of the Gulf of Boothia up to Fury and Hecla Strait of Parry.

Thus was North America finally discovered along its northern shores. It does not fall within these pages to recount the weary search for Sir John Franklin, a long Odyssey of heroism and endurance. The north-west passage was in truth found. Dease and Simpson found it; Rae found it; and Crozier had found it, when he dropped dead in his tracks at the mouth of Back's river. Very nearly was it achieved by sea, for Collinson, in his wonderful voyage in the *Enterprise*, followed the American coast from Behring Strait as far as Cambridge Bay, at the eastern end of Dease's Strait, within 150 miles of the place where the *Erebus* and *Terror* were abandoned. One party alone made the passage—M'Clure and his crew of the *Investigator*, abandoning their ship in the ice-pack in Bay of Mercy, at the western end of Melville Sound, crossed over the ice to Captain Kellet's vessel, the *Resolute*, in the ice-pack at the western end; both ships had to be abandoned, and the crews of five vessels reached England in the *North Star* in 1853.

And now a few words must be given to Sir John Franklin's last expedition, the tragedy which will ever add interest to the northern coasts of Canada. On May 26, 1845, he sailed with the *Erebus* and *Terror*. It had been ascertained by Dease and Simpson that continuous water communication existed along the coast of America. Franklin entered by Lancaster Sound, and finding Barrow Strait blocked, passed up Wellington

Channel to Grinnell Island, and south between Bathurst and Cornwallis Island. The following year he sailed south for the water along the coast, and on September 12, 1846, both ships were beset in Victoria Strait, twelve miles north of King William Land. On June 11, 1847, Franklin died, and the command devolved on Captain Crozier. The ice-pack did not relax, and on April 22, 1848, the ships were deserted, and Crozier with 104 men landed at Victory Point on King William Land to go to the mouth of the Great Fish river, 250 miles distant. Every mile of their course was traced by the pious zeal of search parties. Worn by disease and starvation, they followed down the west coast of King William Land, dropping by the way until at Montreal Island, at the mouth of the river, the last trace disappears. Some forty men were reported by the Eskimo to have reached that far, and the traces of their having a boat were seen. There they must have died of starvation, but the secret of their last sufferings and death will ever remain unrevealed.

CHAPTER XX

THE HUDSON'S BAY BASIN

The Bay

ONE of the most striking features of the map of British North America is Hudson's Bay—an immense navigable inland sea, extending half-way across the continent at its widest part, and bounding upon the north the settled provinces of the Dominion of Canada through thirty degrees of longitude; a distance as great as from London to St. Petersburg. Although Hudson's Bay has been known and continuously navigated since 1610, two years only after the foundation of Quebec, and although for two hundred and thirty years Europeans have resided at points far within its recesses, the nature of the climate and the duration of the season of navigation are still moot questions in Canada, and widely divergent views are confidently advocated concerning them.

Hudson's Bay and Strait extend from 65° to 95° west longitude, a width of 1038 miles, and from the extreme head of James Bay on the south to the Fury and Hecla Strait on the north is a distance of thirteen hundred miles, or nineteen degrees of latitude. It is not then a bay of the Atlantic Ocean alone, because through Fox Channel and Fury and Hecla Strait it opens into the Arctic Sea, and, in considering the physical conditions of the bay, it

is always necessary to bear in mind that there is an opening on the north in latitude 70° down which the polar ice may pass to find an outlet into the Atlantic in latitude 60° through Hudson's Strait. If, however, the name be taken in its narrowest sense, and James Bay, Fox Channel, and Hudson's Strait be excluded, Hudson's Bay is almost square, being 600 miles from north to south, by 590 miles from east to west. In most books James Bay (350 miles long) is taken into the calculation, and in round numbers the dimensions of Hudson's Bay are stated to be 1000 miles from north to south and 600 miles from east to west. The area is approximately given as 500,000 square miles. In the bay proper the depth of water is very uniform, averaging 70 fathoms, excepting near the strait, where it deepens to 100 fathoms. James Bay is, however, very shallow throughout, and even small vessels cannot approach the shore. There is a wide channel down the centre leading to Moose Factory, but beyond the central channel, in many places out of sight of land, the bottom may be touched by an oar from a small boat, and even the main bay along the southern shore is also shallow for a long distance out; so that, from Cape Jones around the whole southern sweep of the shore, there is not a harbour worthy of the name until the excellent harbour of Churchill is reached upon the western coast. The water of James Bay is brackish, for a number of important rivers converge into it from the east and south and west, and the bottom is muddy, whereas in Hudson's Bay proper the water is as bright and as salt as in the main ocean. An elevation of 600 feet would convert the whole area into an immense level plain. The tidal wave enters at the strait and first strikes the western shore. It rises 11 to 12 feet at Churchill, and in the converging shores of the estuary of

the Nelson river it rises 15 feet, but as the tide passes round the coast to the south and east it becomes lower. It is only 9 feet at Moose Factory, and lower still on the East Main.

The Coast

At Cape Wolstenholme, the inner point of the south shore of the strait, the land is very high and steep, rising to nearly 2000 feet; but, turning southwards, it quickly falls to a low and level coast, and so continues as far as Cape Dufferin. There the character of the land changes and becomes high and bold, rising often as high as 1000 feet, until Great Whale river is reached—almost as far south as Cape Jones. This portion of the coast is known by the general name of the East Main. From Cape Jones all round James Bay the coast is very low and the land level, sloping upwards very gradually to the water-parting which bounds on the north the basin of the St. Lawrence system. The coast continues low and the land level all along the south and south-west side of Hudson's Bay. On the western coast it becomes rocky and bolder at Churchill, but though not so low as on the south, the coast cannot be called high as far north as Chesterfield Inlet. The whole area round the bay may thus be generally described as an immense shallow basin, in the centre of which is a sea with a uniform depth not exceeding 70 to 100 fathoms.

The centre and west of the main bay is singularly free from islands, rocks, or shoals. From the inner termination of the strait to Churchill navigation is clear and unimpeded by any nautical danger. The whole stretch of the eastern coast is, however, fringed with innumerable islets close to the shore, and farther out, at a distance varying from 70 to 100 miles, is a chain of

small islands in groups under various names—the Ottawa Islands, the Sleepers, the Belchers—extending from the strait to the southernmost point of the whole bay. Among these islands fringing the bolder coast of the East Main there may be harbours, but otherwise, excepting Churchill, there is no harbour in the bay. Though the centre and west is thus clear, the prolongations of the bay contain many islands. The north side of the bay is shut in by an archipelago; there are a number of islands in the strait and also in James Bay.

The Hudson's Bay Company have posts at the mouths of all the chief rivers, but, as before stated, at Churchill alone is there a harbour which may be connected by rail with the settled parts of Canada, and available for large ships. There the Churchill river empties by a deep estuary into the bay with a narrow opening seawards and bold rocky shores. It is an easy harbour for ships to make, being well marked, and is sheltered from all winds. The anchorage is good and there is a depth of thirty feet of water within, so that it may be considered in all respects as admirably suited for the largest vessels. Other harbours there no doubt are, at Marble Island, where the whalers winter, and in Chesterfield Inlet, but they are too far north to be of practical commercial use.

The most important post of the Hudson's Bay Company is, and has always been, at York Factory, on the Hayes river near the mouth of the Nelson river, the largest river which falls into the bay. At this point the Winnipeg basin discharges into Hudson's Bay, and it is the point of communication with the whole network of waterways to the Rocky Mountains and the valley of the Mackenzie river. There is practically no harbour at York, but a roadstead, and about seven miles from the fort there is good anchorage at a place called Five Fathom

Hole, where large ships may safely lie ; but vessels drawing more than twelve feet cannot go up to the fort, for at low tide there is not more than twelve feet in the channel of the Hayes river. Other chief posts of the company are Fort Albany, Moose Factory, and Rupert's House, at the mouths of the rivers of the same name.



Dr. Bell, Photo.

NORWAY HOUSE—A TYPICAL HUDSON'S BAY POST.

These are very large rivers, and they drain a territory extending from Labrador on the east to Lake Superior on the west, but as they converge into the shallow James Bay, no vessels of any size can approach them. Charlton Island is the only roadstead in James Bay, and all ships go there ; from thence the navigation is very intricate to Moose Factory, and goods are transhipped into smaller vessels or boats.

Drainage Basin

This enormous inland ocean is the basin into which an area of three millions of square miles is drained, for

besides its own immediate tributaries the whole system of Lake Winnipeg finds its outlet by the Nelson river into Hudson's Bay. The Red river, rising in Minnesota south of the source of the Mississippi, flows directly north into Lake Winnipeg, and the Saskatchewan, rising on the eastern slope of the Rocky Mountains, flows eastwards into the same lake, so that the drainage basin of Hudson's Bay extends 2100 miles from east to west, and 1500 miles from north to south. This Winnipeg sub-basin is more conveniently considered in connection with the North-west provinces; it is only necessary to allude to it here to show the immense territory drained by this inland ocean. The basin of the bay contracts towards the north. The rivers on the east or Labrador side grow longer and longer towards the south, and the same condition obtains on the west coast. All this dependent territory slopes down gently and gradually to the bay, for the water-partings are not highlands, but are low and inconspicuous, and the upper streams of the contiguous watersheds interlace at their sources.

Of the many important rivers flowing into the bay it will be possible to notice only the chief, and, in noticing them, to indicate the wonderful system of water communication which covers as with a network even the remotest recesses of the Dominion of Canada, and which has rendered possible the extensive operations of the Hudson's Bay Company and its continuous successful existence from the year 1670 down to the present day.

The first important river on the west is the Churchill or English river, sometimes called by its Indian name the Missinipi river, which after a course of 1100 miles falls into the bay to form the harbour of Churchill. It is a beautiful clear stream of great volume, expanding throughout its course into numerous lakes. It rises in

Methy Lake, and from the lake by a portage (Methy or La Loche) of $12\frac{1}{4}$ miles the Clearwater river, a tributary of the Athabasca, is reached. This portage opens up the whole valley of the Mackenzie. At Frog Portage, a distance of only 380 yards separates the Churchill from the head-waters of the Grass river, flowing into the Saskatchewan at Cumberland House and opening up that large river system. Not far from Frog Portage the Deer river



Dr. Bell, Photo.

FOOT OF GULL RAPID, NELSON RIVER.

falls in from the north, by which Reindeer Lake and the head of Athabasca Lake may be reached. The Churchill is not navigable from the bay, as there are rapids at the head of tide-water. The upper valley of the Churchill is well wooded, but its lower course is through a rocky and barren country.

South from the Churchill is the Nelson river, named after the master of one of Sir Thomas Button's ships who died and was buried there in 1612. It is the largest and most important river of Hudson's Bay, for it is the

outlet of the whole Winnipeg and Saskatchewan system. It is a muddy stream of immense volume flowing in a course of about 360 miles through a flat country. In its upper course it divides into many channels and expands into many lakes; in its lower course it is navigable for river steamers for 40 miles from its mouth. It falls into the bay by an estuary which is flat and muddy. At high tide the estuary is seven miles wide. At low tide the mud-flats and boulders are uncovered and the river shrinks into its own channel. The Nelson is of little value for navigation, for there is no harbour at its mouth. The water of the bay is shallow, and there is no shelter for vessels in the open roadstead which answers for a harbour, so that vessels lying there prefer to put to sea at the appearance of bad weather. There are 10 feet of water on the bar at low tide, but above that point the depth is 20 feet. The width of the river varies from half a mile to a mile and a half, until within ten miles of the tide-water where it widens to three miles.

Eight miles farther south is Hayes river, and York—the chief Hudson's Bay post—is upon the western bank. This river, and not the Nelson, is the boat route to Winnipeg; for the Nelson is too large a stream to be convenient for boat and canoe navigation. The route passes up Hayes river and by Hill river into Knee Lake, and thence by way of Oxford House to Norway House and by Sea river into the lake. The Hayes river with two of its tributaries is navigable for 140 miles for light-draught steamers.

The Severn is the next considerable river southwards. It is a shallow stream, difficult for canoes, passing through a well-wooded country. Continuing to the south-east are many small streams until the Albany river is reached, a very important stream which is now the northern

boundary of the province of Ontario. By the Albany there is a much-frequented route to Lake Nepigon and Lake Superior. The distance is 468 miles, and of this 270 miles are available for light-draught steamers.

Moose river, falling in at the extreme south of James Bay, is navigable for 100 miles, and is the channel of a very much used route to Michipicoton on Lake Superior. Since the Canadian Pacific Railway was built, Missinabi station is the point of departure for the bay. At this point the water-parting of the Hudson's Bay system is within 30 miles of Lake Superior. The whole distance from the bay to the lake at this point is only about 281 miles. The Abitibi, a tributary of the Moose river, is the route by which canoes pass into the Montreal river, which falls into Lake Temiscaming at the head of the Ottawa river. All this country between Lake Superior and James Bay is low and flat, sloping gradually down until about a distance of 100 miles from the bay, when it makes a sudden drop of 100 feet. This fall marks a change in the character of the rocks, which pass from the Laurentian into the Silurian, and at some places into the Devonian system. As far up as this drop many of the rivers might be available for light steamboats.

The rivers which, as far as Moose Factory, flow from the west and south-west thenceforth flow into the bay from the south-east and east, radiating from the southern shore like the spokes of a wheel; so that Rupert's House at the mouth of Rupert's river, the next important stream, and only 100 miles from Moose Factory, is the point of departure for the Saguenay, lower St. Lawrence, and Labrador. Rupert's river flows out of Lake Mistassini, from whence a portage over the height of land leads into water flowing into Lake St. John. On the western side of the estuary of Rupert's river the Noddaway river

falls in, a shallow but important stream draining a wide area.

Many large rivers flow into the bay on the eastern side. The East Main river approaches by one branch close to the waters flowing into Lake Mistassini, but another branch reaches far into the heart of Labrador and approaches the sources of the Koksoak, flowing into Hudson's Strait, and of the Hamilton flowing into the Atlantic; or a canoe may even pass into Manicouagan flowing into the lower St. Lawrence. Great and Little Whale rivers are also important from their size, but north of these the rivers grow shorter as the water-parting of the central basin of Labrador gradually approaches the coast.

Geology

Hudson's Bay lies within a basin of the Laurentian nucleus, on the reverse or inside of the great V-shaped mass of crystalline rocks which forms the framework of the continent, and which from the earliest formative period has dominated its shape. One arm of this mass of primitive rock reaches from near the delta of the Mackenzie on the Arctic Sea on the west, and the other stretches from the north of Labrador on the east. The Laurentian rocks come to the surface on the northern shores of the bay, both on the eastern and western side; but on the southern shore there is a border of Cambro-Silurian rocks of varying width. South and west of James Bay this border of later formation is from 100 to 200 miles wide. On the south, from near the water-parting of the St. Lawrence system, the limestones of the later formations slope gradually down to the bay, and the rocks pass in places into the Devonian. On the eastern coast, north of Cape Jones, there is a narrow strip of

Cambrian, and the islands which cluster along on that side of the bay are of that formation.

Minerals

The country around the bay possesses considerable mineral wealth, especially upon the eastern coast, where are masses of iron ore, chiefly manganiferous carbonate of iron. Upon the islands on that coast copper ore is abundant. Galena is found in several places, and mica is plentiful, and occurs in sheets a foot square. Plumbago is frequently met with. Lignite coal occurs on the Moose and Abitibi rivers, but no deposit of importance is known. Gypsum occurs on Moose river; and the limestones on Lake Abitibi have been reported to carry petroleum.

The Strait

Hudson's Strait, lying as it does between 60° and 65° north latitude, may be considered as being in a sub-Arctic region. The shores are high and bold; the water is from 100 to 200 fathoms deep, and until the opening out of the bay is reached, the course of vessels is clear of islands. There are no rocks or shoals in all its length. It is about 450 miles long, with an average width of 100 miles; at the narrowest part the width is 45 miles. The shore on the north side is bold, but sloping; on the south bluff and precipitous. For the greater part of its length both shores are visible from mid-channel because of their height, which is seldom less than 1000 feet. Cape Chidley, at the southern entrance, is 1500 feet, and Cape Wolstenholme, at the southern point where the strait opens into the bay, is nearly 2000 feet high. This does not, however, apply to Ungava Bay, a deep and broad indentation of the southern shore. The coasts of this

bay are low and flat, and here the Koksoak or Ungava river, which drains the central basin of the Labrador peninsula, discharges into the strait. This is a large river, with a course of 350 miles, and with an average width of a mile for sixty miles from its mouth. Thirty miles up the river is Fort Chimo, a post of the Hudson's Bay Company, and the river is navigable for ships four miles farther up.

The tides in Hudson's Strait rise to a height of 30 feet or 40 feet in spring tides, and flow with great swiftness. This prevents the strait from freezing over, notwithstanding its high latitude; but, in conjunction with the drifting ice, seriously complicates the question of navigation. At the mouth of the Koksoak river the rise and fall of the tide is stated in evidence before Parliament to be 64 feet, and at Fort Chimo it is 30 feet, or $38\frac{1}{2}$ feet at spring tides. They flow with a velocity of 3 to 6 miles an hour, and when there is much ice in the strait vessels not specially prepared for northern waters are in danger of being crushed.

With regard to the bay itself, it is proved that it does not freeze in winter. Ice forms on the shores to a varying distance out. In James Bay, where the water is shallow and brackish, the ice extends far out; but it is proved that there is always open water in the body of the bay, and that what ice there is is loose, and of one season's formation. There may be field ice, collected in the centre of the bay from the circular progress of the tidal wave; but all through the winter the vapour of the open water may be seen from the shore.

Navigation

The chief difficulty of navigation is in the strait which is at the north of the bay. The bay ice is not heavy,

but in the early summer the disadvantage of the northern inlet from the Arctic regions becomes manifest, for heavy ice comes down Fox Channel, and for an uncertain period, until it gets an outlet to the ocean, it floats up and down the strait with the ebb and flow of the tide. This is the ice reported by Lieutenant Gordon as 40 feet thick. Few bergs are met, and those which occur are small, excepting, as sometimes happens on the north shore, bergs are carried in by an indraught of the Arctic current to pass out along the southern shore. This ice sometimes forms into a pack in the strait, and then a vessel must wait until it opens out with the wind into leads. It may for a while completely block the strait at its narrowest part or may become entangled in the land or among the islands at the inner end. Neither bergs nor heavy ice are encountered in the bay west of Fox Channel.

The subject is one of great importance to Canada, and the most diverse opinions are advocated respecting it. Port Churchill is almost at the centre of the continent of North America, and it is on the northern edge of the greatest food-producing region in the world—the illimitable wheat area and the cattle ranches of the Canadian North-west. A far northern course like this is almost a great circle, and therefore the distance from Winnipeg *via* Hudson's Bay is very much shorter than *via* Montreal. Stated in geographical miles, the distances are as follows:—

From Winnipeg to Liverpool <i>via</i> Hudson's Bay	3507
From Winnipeg to Montreal, Canadian Pacific Railway	1234
From Montreal to Liverpool	2790 4024
Difference in favour of Hudson's Bay	517

If then it can only be established that the route *via* Churchill is as safe as *via* Montreal, and is open for a

sufficiently long period to make it commercially available, the paramount importance of the fact to the North-western territories is evident.

The following distances are given by Admiral Markham :—

Liverpool to Churchill	.	.	2930	nautical miles
„	Quebec	.	2650	„ „ by Belle-isle.
„	„	.	2820	„ „ by Cape Race.
„	Halifax	.	2490	„ „
„	New York	.	3040	„ „

That the navigation is safe enough at certain seasons is clear from the fact that for 220 years the Hudson's Bay Company have annually despatched one or two ships to ports on the bay with an unusual freedom from accident or loss. That one fact is sufficient to demonstrate the safety of the route, the only question is the length of the period of safety. The depth of the water, the freedom from shoal or reef, and the boldness of the land on both sides of the strait are favourable circumstances, and if the dip of the needle in consequence of the proximity of the magnetic pole is so great as to render the compass unserviceable, the fact that during midsummer the light in such high latitudes extends over almost all the twenty-four hours is a largely compensating advantage.

Not the least difficult part of the problem is the stream of ice in the Atlantic carried past the mouth of the strait by the Arctic current. This may be 100 or 200 miles wide, and for that reason the invariable rule of the Hudson's Company's captains, based on the experience of 200 years, is to time their departure from England so as not to reach the outer stream of ice flowing down from the north before 15th July, and to leave the bay on the return voyage not later than the end of September, making a period of safe navigation of two and

a half months. Many conflicting statements are made; but, for sailing ships, the weight of evidence goes to show that the average period of safe navigation lies between these two dates.

While this period is not strongly combated, so far as regards sailing ships, it is warmly urged that the employment of steamships completely alters the question. It is maintained that vessels, specially built for such a trade, and for contact with ice, and provided with powerful engines, could enter the ice at a much earlier period and remain much later in the bay. Sealing steamers from Dundee and Newfoundland carry on their regular business amongst the ice in early spring, and it is claimed that freight steamers could be built in a similar manner to encounter the ice with equal impunity. Such vessels, it is argued, could enter the pack as early as 15th June and remain to 1st November; that is, four and a half months. Between these extreme periods of two and a half and four and a half months the controversy is waged.

The Canadian Government has attempted to solve the problem in a practical way, and in 1884, 1885, and 1886 sent a steamship into the bay under Lieutenant Gordon, R.N., with a staff of observers, who were distributed at six stations on the shores of the strait, to remain through the winter and report upon the movements of the ice and all other occurrences of interest. In 1884 the *Neptune*—a Newfoundland sealing steamer—was employed, and in 1885 and 1886 H.M.S. *Alert*, a steamer which had been with the Arctic expedition under Sir George Nares, was lent by the Admiralty. In 1886 the observing parties were brought back. They had passed a pleasant winter, for game had been plentiful. The sum of Lieutenant Gordon's report was that the first half of July was the earliest date at which the

straits may be considered as navigable for the purposes of commerce by steamships fitted for ice navigation, and at the same time capable of being used profitably as freight carriers; and that the middle of October was the latest. He was of opinion that while it might, under exceptionally favourable circumstances, be possible to extend the time from 1st July to 1st November, that a period of three months, namely from 15th July to 15th October, was for all practical purposes the extreme time during which it would be safe for steamships to navigate the straits.

It happened that the former commander of the *Alert* on the Nares expedition, Captain (now Admiral) Markham went as a passenger on the expedition of 1886. His opinions are recorded in the *Proceedings of the Royal Geographical Society* for 1888, and he states that "a well-found steamer is able to make her way with ease through the ice in Hudson's Strait in June and July, when a sailing ship would be hopelessly beset"; and he reports on the authority of the observers at Ashe Inlet that the ice did not form in the strait before December, and that the channel was perfectly free for navigation during the entire month of November. He thinks that the vessels should be specially constructed to resist ice pressure, should be of considerable steam-power, and strengthened at the bows to repel the severe blows caused by striking the floes when threading their way through a stream of ice. The reports of the observers farther up the strait were not so favourable. In the subsequent discussion Dr. Rae, the celebrated Arctic explorer, who as an officer of the Hudson's Bay Company had resided on the bay, stated that the bay itself was navigable for five months, but he differed strongly from Admiral Markham's conclusions and supported Lieutenant Gordon's report.

The geographical facts are therefore plain enough, and the question has become one for naval architects and merchants. Can steamers be built, economical as freight carriers, and at the same time suitable for forcing their way through field ice? The ice which comes down Fox Channel is 12 to 20 feet thick, and, even if much of the ice be brashy in June or July, the blades of a propeller are apt to be broken by quite small pieces of ice. No one disputes the presence of the ice,—whether loose or packed, brashy, honey-combed, or heavy, the ice is there; and if the steam vessels are built to encounter it, will they carry sufficient cargo for profit, and what will be done with them during the long season of winter, for with such a build they cannot compete with the vessels built as carriers for more southern ports? Lieutenant Gordon records the fact that towards the western end of the strait the compass will not work owing to the proximity of the magnetic pole. In the long days of June and July that might be unimportant, but in the late fall the nights would be long and dark with snow and storm. The question is one of such prime importance to the wheat-growers of the Canadian North-west, that another vessel, the *Diana*, is now, in the summer of 1897, on its way to the bay to settle the controversy in some indisputable manner.

Climate

The climate of Hudson's Bay has also been a subject of controversy, and when it is considered that the bay extends from lat. 51° N. to lat. 70° N., it will be seen that in any statement concerning climate there is much need to indicate precisely what part of the bay is meant. This stretch of latitude corresponds with the stretch from Land's End in Cornwall to the North

Cape in Norway—the most northern part of Europe, and well within the Arctic circle. The country around Hudson's Bay can never be an agricultural country, and even though it be true that vegetables have been seen growing in sheltered spots, it may or may not be true that the same vegetables could be grown in the open on a large scale. The inquiry has no practical bearing while so many millions of acres of rich arable soil are lying vacant all over the vast territory of the Dominion.

Churchill is the northern limit of the cultivated grasses on the west coast of the bay. The line drops on the east side to the northern point of James Bay. The line which marks the northern limit of cultivation of barley, rye, oats, and the root crops crosses James Bay from east to west about half way up. The northern limit of the growth of wheat passes altogether south of the bay without touching any part of it. In the same way the northern limit of deciduous trees barely touches the extreme south of James Bay. Some of the coniferous trees are found on the west coast considerably to the north of Churchill and almost as far north as Chesterfield Inlet. On the east coast the tree line drops to Cape Dufferin, but the growth is stunted at the extreme northern limit. North of that is the region of mosses and lichens, the food of the caribou and musk-oxen. All around the bay the trees are small when they come down to the coast, and the ground is covered with sphagnum moss; but a little way back the level land is well wooded, and much valuable timber of large size grows along the upper waters of the many large rivers which empty into James Bay.

The resources of the bay as to fisheries are important. Far to the north, up Rowe's Welcome and Fox Channel, is the favourite resort of American whalers, who winter

at Marble Island, inside the gulf near Chesterfield Inlet, so as to commence operations as soon as the ice breaks up. These people are reported to be fast destroying the fishery by their destructive methods, and every year they have to go farther north; for the latest reports go to show that they have destroyed almost all the large marine animals in the upper part of the bay. In the northern seas of Canada is the last retreat of the whale, and some control should be exercised over these strangers. The seal and porpoise fisheries are productive, and salmon abound in the rivers. The cod fishery extends round from the Atlantic into the strait as far as Ungava Bay. The territories surrounding the whole bay are productive in fur-bearing animals. Caribou (reindeer) are abundant, and in the Barren Grounds of the North-west as far as the Arctic Ocean are the haunts of musk-oxen. They are met also north of the strait, but not south of it. South of the strait throughout all the peninsula of Labrador roam large herds of the barren-ground caribou or reindeer. There is abundance of feathered game in its season—ducks, geese, loons, ptarmigan. Far in the north, at Repulse Bay and on the Arctic coast, the Hudson's Bay officers could always maintain themselves. Eskimo live in bands all round the bay. Some of their settlements have existed for 100 years in the same place, and all the Canadian parties of observation which entered the bay were abundantly supplied with fresh meat during the winter by the Eskimo.

History

There is much interesting history and even romance clustering round this remote and solitary inland ocean of the north. It was explored very early. On Ruysch's

map in the "Ptolemy" published in 1508 is a legend which reveals personal experiences inside the strait. "Here a surging sea commences, here ships' compasses lose their properties." Ruysch had probably been with the Cabots in the second voyage in 1498, and they had evidently penetrated for some distance within the strait. It is often stated that Cabot in 1517 discovered the bay, but there is no ground for the assertion. The maps about 1540 and onwards showed, in an indefinite way, an ocean north of the land. Michael Lok's map in Hakluyt's *Divers Voyages*, 1582, showed a long inland reach of sea extending to the south-west towards the southern ocean, but that was only conjecture, as is proved by the rare and celebrated Molyneux Map in the Hakluyt of 1600, where Hudson's Strait is indicated by the words "a furious overfall" marked against a long inlet, but the passage is closed. Frobisher in 1576 and Davis in 1588 had looked into the strait, and Cape Chidley had been named by Davis after Sir John Chidley (not Chudleigh), a worthy of Queen Elizabeth's time who took an interest in north-west explorations. It was not until 1610 that Hudson first of all worked through into the bay. It was early in July that he got in by coasting along the southern shore of the strait. He named the inner cape after Sir John Wolstenholme, one of the contributors to the expedition, and with surprising courage pushed on to the southernmost recesses of James Bay, where he was frozen in on November 10. He wintered there, and had no difficulty in providing for the ship's company, as game and fish were abundant. On June 18, 1611, he sailed for home; but a mutiny broke out among the crew, and shortly after he with five sick men and two others of the crew were put into a boat and abandoned and were never more heard of. So perished this chief

among great navigators in the great bay which bears his name—a name written larger on the map of this continent than any other. For 170 years no navigator was able to approach the North Pole nearer than his record in 1607. The Hudson river still bears his name, and justly so, for he first explored it in his search for a passage to the south sea, and sailed up to the site of Albany. The miserable wretches who abandoned him for the most part perished at the hands of the Eskimo, and others died of starvation on their passage home.

The news was brought to England by the few surviving mutineers, and in 1612 Sir Thomas Button was sent out to rescue Hudson, if perchance he had survived. Button wintered at the site of the present York Factory. The great river near is called Nelson river from his sailing-master, whom he buried there, and that part of the bay is known as Button's Bay on many old maps. In 1615 Baffin and Bylot explored the north of the bay about Southampton Island. A Danish Captain, Monck, was the next adventurer to explore for the north-west passage. He wintered near Churchill, but not knowing how to take care of his crew, only he himself with two of his company got away alive. On some old maps that part of the coast is named New Denmark. Then in 1631 followed Captain Fox, "North-West Fox," as he called himself, who discovered and named Fox Channel, and the same year Captain James sailed into the bay and wintered there, near the mouth of Rupert's river, at the head of the bay still called after him. The north-west passage still remained hidden, and for a hundred years the perilous quest was abandoned.

In 1608 Champlain founded Quebec, and, as the colony of New France grew strong, enterprising spirits among them began to reach out west and north in their

trading expeditions. But the priest often preceded the trader, and Father Albanel was sent overland by Talon to the bay in 1672. He went by way of the Saguenay, Lake Mistassini, and Rupert's river, and found a small vessel of ten tons with an English flag and two empty houses. The English had, in fact, resumed their voyages to the bay, and Captain L. Gilham had been at the mouth of Rupert's river in 1667. The charter of the Hudson's Bay Company had been granted in 1670, and it was the report through the Indians of the English trading-posts on the bay which suggested the expedition of Father Albanel to Talon—then Intendant of New France.

The French traders then extended their operations to the bay, and soon commenced that struggle between the two nations for its possession, of which the obscure and contradictory accounts fill a large number of state documents. The Hudson's Bay Company, in 1686, had five forts on the bay at the mouths of the five largest rivers, when, in a time of profound peace, the governor of New France sent an expedition overland from Montreal and captured them. The expedition was commanded by the Chevalier de Troyes, and went by way of the Ottawa and Abitibi rivers. The English people resented this raid, and recovered the forts. At this time, after the bay has been neglected for so long, it is difficult to realise the importance then attached to it; but, in fact, then, and even down to Parry's second expedition, it was the current belief that the north-west passage lay hidden in some unknown corner of it. So the struggle went on until in 1697 Iberville—a French-Canadian Nelson born in Montreal—was sent in command of a squadron of four vessels to destroy the English power completely in the north. One of his vessels was crushed in the ice, and

Iberville, when he got through in his ship, the *Pelican*, found himself alone, his consorts having been separated by the ice. Three ships hove in sight, which he at first took to be his own ships, but they proved to be three English armed vessels—the *Hampshire*, 52 guns, the *Daring*, 36 guns, and the *Hudson's Bay*, 32 guns. Iberville's vessel, the *Pelican*, had only 44 guns, but he was a consummate sailor and a daring captain, and he boldly attacked the *Hampshire*. It was a unique sea-fight. The weather was very heavy at the time, and the situation was complicated by the masses of ice; but the fight continued for four hours—all one July morning—until the *Hampshire* went down with all on board. Iberville then attacked and captured the *Hudson's Bay* ship, but the *Daring* escaped by flight. Iberville's consorts joined him after the battle, and he proceeded to reduce all the forts on the bay—to little permanent effect, for by the treaty of Utrecht Hudson's Bay was restored to the English Crown, and for seventy years the bay was at peace, until, in 1782, La Perouse, with a squadron of frigates, seized the forts again, and carried away the traders as prisoners of war.

Once more at peace, the quest for the north-west passage was revived, and the spell which Sebastian Cabot, that arch schemer among navigators, had laid upon the English people, began again to work. Somewhere hidden in the bay was the opening of the Strait of Anian of the old maps, opening into the Mar del Zur; and in 1719 James Knight, who had been governor on the bay, set out with two ships to find that mythical passage. The whole expedition utterly disappeared; nor could its fate be conjectured, until, in 1759, forty years later, remains were found on Marble Island, which proved that the whole party—two ship's crews—had miserably

perished of cold and famine during two terrible years of struggle and agony.

In 1741 Captain Middleton was sent to the north-west corner of the bay on a voyage of discovery. He discovered Wager inlet and Wager river and Repulse Bay and the strait north of Southampton Island called by him,



VIEW OF MARBLE ISLAND, FROM DEADMAN'S ISLAND.

SS. *Neptune* in the Harbour.

and still known as Frozen Strait, for it was packed with ice. His report was vehemently discredited by Sir Arthur Dobbs, and he, in 1746, fitted out an expedition to demonstrate that Wager inlet was in very truth the longed-for opening to the great southern ocean. This attempt led to no result.

The search by land then commenced. The company had built a fort at the mouth of Churchill river—Prince of Wales fort—and the officers, having heard from the Indians marvellous stories of mountains of copper, sent off Samuel Hearne to discover them. This persevering

explorer succeeded at his third attempt, discovered the Coppermine river and followed it down to the Arctic Ocean, upon whose gloomy and desolate shore he was the first white man to tread.

Hearne's expedition had shown that there was no passage to the South Sea ; but the passion of the English people for the north-west passage returned with increased vehemence in 1818 when Parry, the prince of Arctic navigators, made, on his first expedition, the brilliant discovery of the archipelago which now bears his name. At the end of Melville Sound he encountered an impassable barrier of ancient ice. On his second voyage in 1821 with the *Hecla* and *Fury* he followed up the north-west angle of Hudson's Bay, if, perchance, might lurk there a passage into the Arctic Sea round the southern edge of the impervious Arctic pack at the north. The result of his voyage justified the slandered Captain Middleton. He passed up by Fox Channel and sailed through Middleton's Frozen Strait and tried to find a passage through at Repulse Bay. He then followed up north the eastern shore of Melville peninsula and wintered at Winter Island. The next summer he pushed on farther and discovered the outlet of the bay at the north and called it Fury and Hecla Strait. This he supposed to be the long-sought passage, but it was solidly blocked with ice and, after passing a winter close to the strait and exploring the adjacent region by sledging parties, he returned without getting through. The search was continued in 1824 by Captain Lyon who had been with Parry. His orders were to establish himself at Repulse Bay and explore across the narrow isthmus by sledging parties. He unfortunately went south of Southampton Island and his ship was so damaged by heavy storms and ice that he got no farther than Wager

inlet. Thus closed the record of the search for the north-west passage by Hudson's Bay, nevertheless it was from the key-point of Repulse Bay that the Arctic problem was eventually solved.

Arctic exploration with ships by way of Hudson's Bay having ceased with Captain Lyon's expedition in 1824, it was taken up in other directions—by way of Behring Straits, by land along the shores of the Arctic Ocean, and by way of Lancaster Sound. Sir John Franklin sailed in 1845 with the *Erebus* and *Terror* with 129 souls, and no news of him came back. The search commenced in 1848. England could not rest while the fate of her sailor-hero was unknown, and the interest and sympathy of her colonies and the United States were warmly enlisted in the search. Dr. Rae, an officer of the Company, had been for several years engaged in searching the Arctic coast, and at last, in 1853, he was again sent out by the Hudson's Bay Company and went up the west coast to Repulse Bay. He established his headquarters there at a place he called Fort Hope, on the isthmus now called Rae's Isthmus. He supported himself and his little party of four men all the winter by his skill with his rifle, and in the summer of 1854 he explored westwards and northwards until at Cape Porter, on the west coast of Boothia peninsula, he met the Eskimo from whom he learned the sad details of the fate of the Franklin expedition and won the reward of £10,000 promised by the British Government to the person who should bring home the first definite and certain news.

So closed the romantic annals of this solitary sea. Cold and forbidding though it may be to the outward eye, the heart warms at the thought of the deeds of heroism and of patient endurance which its silent wastes have witnessed. The names along the coasts are mostly

the names of old worthies of far-off days, suggesting memories which stir the blood and quicken the pulse. If the present expedition results favourably we shall see the bay and strait of Hudson become an important factor in the development of the Canadian North-west.

NOTE TO CHAPTER XX

The following publications will be useful for further details :—

GORDON, Lieut., R.N.

Reports on the Hudson's Bay Expeditions, 1884, 1885, 1886.

OGILVIE, WILLIAM.

Exploratory Survey to Hudson's Bay in 1890. Ottawa, 1891.

REPORTS OF THE GEOLOGICAL SURVEY.

R. Bell, 1878, 1880-84, 1885.

EAST MAIN COAST.

R. Bell, 1878.

WEST COAST.

R. Bell, 1885. J. B. Tyrrell, 1894.

STRAITS.

R. Bell, 1884-85.

CHAPTER XXI

LABRADOR

LABRADOR is that peninsular mass of north-eastern America which stretches the farthest across the Atlantic towards the British Islands and towards Greenland. It is separated from the main continent by the Gulf of St. Lawrence and Hudson's Bay and Strait, and the main Atlantic washes its eastern shore. It extends between the parallels of 50° and 62° N. latitude, and the meridians of 56° and 79° W. longitude. It lies between the same parallels as the British Isles, from the Scilly Islands to one degree beyond the most northerly of the Shetlands, and its area is equal to the combined areas of the German Empire, Austro-Hungary, and Italy. Although it is nearer to Europe than any other part of the western world, and was almost the first land across the ocean visited by Europeans, its interior was, until the last three or four years, less known than the interior of Africa; and, even now, there remain probably 120,000 square miles of it where the foot of a white man has never trodden.

Approximately the shape of the territory is that of a truncated triangle presenting its base to the north-east. From the outer end of the Strait of Belle-isle to Cape Chidley is about 700 miles, and from thence along Hudson's Strait to Cape Wolstenholme is about 500 miles, so that a

line of about 1200 miles, in a general direction to the north-west, will form a base. From Cape Wolstenholme to the extreme south of James Bay is 800 miles. That will make the second side. The third side, however, presents a difficulty; for starting westwards from Belle-isle there is no consensus of opinion as to where it should stop. Some would prolong it to the mouth of the Saguenay; but it is better to follow the opinion of the most recent and chief explorers, Messrs. Low and Eaton, and stop at the well-known harbour of Seven Islands; the distance is about 500 miles. Then the apex of the triangle will be cut off by a line from Seven Islands to the southern point of James Bay. The line will be nearly 600 miles long, and the neck of the peninsula will be very wide; but, although territorial divisions will seldom submit to geometrical treatment, this rough approximation will serve to convey a general idea of the configuration of Labrador. The area so inclosed covers an extent of 511,000 square miles. It will help to give an idea of the distances involved, if it be added that from the mouth of the Saguenay north to Cape Wolstenholme is 1070 miles in a straight line, and from Cape Jones in Hudson's Bay to the Strait of Belle-isle is a line nearly east and west, of 1065 miles.

The present chapter, however, will deal with the northern part only of this territory. The southern watershed, draining into the St. Lawrence basin, forms part of the province of Quebec, and will only be incidentally touched upon here. There is a vagueness of usage of the word Labrador which may be confusing. The north shore of the Gulf of St. Lawrence is often called Labrador, and it is the Labrador coast of the province of Quebec, or southern Labrador: but when the word is used without qualification, it generally signifies that part of the

coast from the Strait of Belle-isle to Cape Chidley, which politically belongs to the government of Newfoundland.

The peninsula of Labrador may be described as a tableland having a general elevation of 1500 to 2000 feet above the sea. The interior plateau over an area of 200,000 square miles is a rolling country, in which the differences of level seldom exceed from 300 to 500 feet, and the higher elevations do not exceed 2500 feet above the sea. On the Atlantic coast the plateau rises abruptly from the sea in stupendous cliffs, increasing in height towards the north to a point 70 miles south of Cape Chidley, from whence the height decreases, until at the point of the cape it falls to 1500 feet. The shore of Ungava Bay is low, but from Cape Hope's Advance to Cape Wolstenholme the coast again rises, and continues for 270 miles lofty and bold, 500 to 2000 feet high all along the south of Hudson's Strait. On the eastern shore of Hudson's Bay the coast is low, excepting between Portland promontory and Cape Jones, where a range of mountains 1000 to 2000 feet high approaches close to the shore for 350 miles. On the south the plateau drops in steep terraces down to the level of the river and Gulf of St. Lawrence.

Three water-partings divide the country into four divisions. The Laurentian mountains mark off southern Labrador. They follow the general trend of the coast at distances varying from 100 to 200 miles, until they terminate on the Atlantic in the Mealy mountains around Sandwich Bay, south of Hamilton Inlet. At a point a little south of the centre of the peninsula, in the square where the meridians of 69° and 70° W. cut the parallels of 53° and 54° N., is the apex of a roughly approximate triangle formed by two water-partings inclosing the watershed of northern Labrador. One leg of this triangle

extends to the western end of Hudson's Strait at Cape Wolstenholme, marking the limit of western Labrador where the streams flow into Hudson's Bay, the other leg extends to Cape Chidley at the Atlantic end of the strait, marking off eastern Labrador where the streams fall into the Atlantic Ocean. As this triangle spreads to the whole length of Hudson's Strait, which is its base, the rivers on the exterior necessarily grow shorter and shorter. The apex is, and has been in former geological ages, the central point of Labrador; for as the streams flow north, south, east, and west from that centre the lines of striation on the rocks bear witness that there was the *névé* from whence the glacial streams flowed in the ice-age.

This central elevation is also the apex of a roughly approximate triangle to the west with its base on Hudson's Bay, and another to the east with its base on the Atlantic coast. Necessarily, the longest rivers rise there. Summit Lake discharges to the north by the Koksoak river, 600 miles long, flowing into Ungava Bay in Hudson's Strait, and to the south by the Manicouagan river, 325 miles long, flowing into the St. Lawrence. The lake is 1940 feet above the sea, and is upon the 53rd parallel of latitude. Within a few miles of Summit Lake are the head-waters of Big river, flowing in a course of 550 miles westward into Hudson's Bay. The fourth great river of Labrador flows eastward—the Hamilton river, 600 miles long—and its chief source is in Ashuanipi Lake between the parallels of 52° and 53° , and on the meridian of $66^{\circ} 30'$. The four greatest rivers flowing north, south, east, and west, thus have their sources within a very limited area on the central plateau. The highest point of the plateau is 2400 feet above the sea, on the water-parting of the Big river of Hudson's Bay, and the Manicouagan at Lake Attikopi, in longitude 70° and latitude $52^{\circ} 40'$.

The surface of this enormous plateau consists largely of marshes and bare rock, cut up by lakes innumerable and traversed by a maze of streams which flow almost on the surface. The country seems unfinished, as if it had been left as a specimen to show what other countries may have been at the termination of the glacial epoch, when the rivers had not worn down their beds, and valleys and basins had not been formed. So the rivers are here at this late age still like strings of lakes, and the lakes often discharge in two directions. The rivers divide and unite again as they flow over the level table-land in a way confusing to the explorer. Fully one-fourth of the area of the peninsula is occupied by rivers and lakes mostly shallow—many not over 20 feet and few over 50 feet in depth.

The largest lake is Mistassini, which is, however, deep. It is 100 miles long, but, being very narrow, it covers an area of only 500 square miles. Among the larger lakes are Nichicun (1760 feet above the sea) at the head of Big river; Lake Kaniapiskau (1850 feet) on the head-waters of the Koksoak river, this lake is over 50 miles long; Lake Michikamau (1650 feet) on the head-waters of the Hamilton river, a deep lake 80 miles long by 20 miles broad. The Ashuanipi and Attikonak, two main tributaries of the Upper Hamilton, take their rise in lakes of the same names (1700 feet). From this latter lake the portage to the Romaine river, flowing into the St. Lawrence, is only half-a-mile across. There are no lakes on the grand scale of the west of the continent.

The rivers are, however, for the most part difficult to ascend, for, as they approach the edge of the plateau, they hurry down in swift continuous rapids and precipitous falls, so that while it seems easy upon the map to pass in any direction through the peninsula, it is in practice

extremely laborious to portage or to work up the rivers to reach the interior level. The portages are usually rough; for the surface of the country is strewn with boulders, and these are for the most part angular, and have not been rounded by travel, while the rivers, in descending to the lower levels through the mountains which fringe the plateau, have cut narrow gorges or cañons requiring great effort to ascend. The southern rivers especially flow in deep valleys 500 to 1000 feet below the fringing highlands. On a portion of the western side, however, the watershed inclines with a gentle slope to James Bay, so that the country is most accessible from that side.

Until recently, the interior of Labrador was a great unknown land. M'Lean, an officer of the Hudson's Bay Company, was the first white man to enter it, and in 1838 and 1839 he crossed from north to south from his station on Ungava Bay to the posts on the Hamilton Inlet. Some of the Oblate missionaries had followed the Montagnais Indians from the Gulf of St. Lawrence to their winter retreats on the Hamilton river and its branches, and they established a mission on the North-west river, from whence Father Lacasse had gone in 1875 to Ungava Bay. The Hudson's Bay Company had a few posts in the interior on the main routes; Messrs. Richardson and M'Ouat had examined the country around Lake Mistassini, and Dr. Robert Bell had explored and reported on the coast region in its whole circuit from James Bay around by Hudson's Straits and the Strait of Belle-isle; Professor Hind had gone up some of the southern rivers to the tableland; but it remained for Messrs. Low and Eaton in their explorations during 1892-94 to open up the heart of this formidable wilderness. They entered by the south-west, by Lake St. John, the head of the Saguenay,

passed up the Chamouchouan (Ashuapmouchouan), and crossed to Lake Mistassini. From thence they explored the East Main and Rupert's rivers to James Bay. Returning the following year they went up the East Main river and the Big river to its source, crossed the water-parting of the northern watershed, and followed down the Koksoak river from its source to its mouth in Ungava Bay. At Fort Chimo they found the Hudson's Bay Company's supply vessel which took them around the east coast to Rigolet, the Company's post on Hamilton Inlet. They thence explored the Hamilton river to its source, and the highest part of the central plateau, then turning southwards they crossed the southern water-parting and followed down the Romaine and St. John rivers to the Gulf of St. Lawrence. Thus, in a series of most arduous explorations, an area of 289,000 square miles of the peninsula was examined, for much of which even Indian guides could not be found. Maps showing the results of their labours were compiled by Mr. Eaton, and have just been published.

The explorations of Messrs. Low and Eaton show that while Labrador is, in reality, a very uninviting country, Professor Hind's oft quoted words that "language fails to depict the awful desolation of the tableland of the Labrador peninsula," are too strong. Although large game has become scarce in the south, the myriads of lakes and streams are alive during the summer with wild ducks and geese. The explorers found also that fish, whitefish, lake trout, and brook trout, were very abundant in all the inland waters. The country is, however, the very home of mosquitoes and black flies; for everything in it—land, water, climate—tends to produce an environment in which these irritating insects increase and multiply. It is by no means everywhere a treeless waste; but the

forest is continuous south of 53° , and north of that latitude, while the summits and northern slopes of the hills are bare over large areas, in the valleys of the streams and lakes, and at the heads of the inlets, and in sheltered places, white, black, and balsam spruce, as well as birch and poplar, are abundant. In the valley of the Hamilton river the spruce attains 24 inches in diameter at a height of 3 feet from the ground. Dr. Grenfell reports trees at the head of Sandwich Bay from which 60 feet spars might be made. North of latitude 54° the timber is not large enough to be of much commercial value, and the tree limit is reached at latitude 58° , or about the southern coast of Ungava Bay. The northern part of the peninsula, where the trees are scant, is covered with reindeer moss. At the south this is replaced by sphagnum. A large portion of the forest region has been swept by fires started by the carelessness of the Indians, who take no precautions with their camp fires.

Geologically, Labrador is an immense area of Archæan rocks. Nine-tenths of the whole peninsula consists of Laurentian gneisses with intrusions of granite, basalt, and syenite. Masses of anorthosite occur in the southern part of the territory. Huronian rocks occur to a somewhat large extent along the East Main river, and on some lakes south-west of Lake Mistassini. Small areas are reported along the coasts of Hudson's Bay and the Atlantic Ocean. The Cambrian formation is found over large areas along the Koksoak river and on the upper waters of the Hamilton river. A narrow band of Cambrian extends along the coast of Hudson's Bay from Great Whale river to Richmond Gulf, and the islands along the coast are of the same formation. A large area of Cambrian extends also along the southern shore of Lake Mistassini. Enormous quantities of bedded iron ore specular, carbon-

ate, and red hæmatite, occurring in mountain masses, were observed in the Cambrian along the Koksoak river and on the upper waters of the Hamilton. These ores are unfortunately too inaccessible to be available. No other minerals of economic value have been observed in quantity. Labradorite of the precious variety occurs in very large masses on an island near Hopedale on the Atlantic coast, and Low and Eaton found it also in great abundance on Lake Michikamau. It is a beautiful mineral and glistens with opalescent colours from bright blue to bronze green and yellow. It is sometimes used in jewelry. For ten miles along the lake large crystals were found.

Of the four divisions previously referred to, the western watershed is the largest, and many large rivers flow through it to fall into Hudson's Bay. The Big river is 550 miles long, the East Main and Great Whale rivers are 250 miles long, Little Whale river and Clearwater river discharge a group of large lakes, but the region around the last two is practically unknown. The watershed from James Bay slopes very gradually up to the dividing ridge, and is an exception in that respect to the rest of the peninsula.

The northern watershed is chiefly drained by the Koksoak river and its affluents, which rise in groups of small lakes at the apex of the central triangle and flow into Ungava Bay. Next after the Hamilton it is the most important stream in the peninsula, and drains an area of 60,000 square miles. The George is a very large river, and falls also into Ungava Bay after a course of about 300 miles. Whale river in the same division is 150 miles in length. The coast of Hudson's Strait, which forms the base of the northern watershed, has been described in the chapter on Hudson's Bay.

As the watershed to the south along the Gulf of St.

Lawrence has been already considered in connection with the province of Quebec, of which it forms a part, there remains to be noticed only Eastern Labrador, that portion of the peninsula along the coast politically a dependency of Newfoundland. Blanc Sablon, at the inner end of the Strait of Belle-isle, is the point of separation from Quebec. From thence a line is drawn due north to the 52nd degree of latitude. There the line stops, and the governor's commission goes on to say that from the point of intersection of that line with the parallel of 52° the *coast* of Labrador and all its islands to Cape Chidley shall be under the government of Newfoundland. How far inland from the coast-line the jurisdiction of Newfoundland extends has not been authoritatively decided, and is not a practical question. Behind the mountains of the coast range, up to the height of land, the country is unexplored, excepting the valley of the Hamilton river.

Eastern Labrador presents to the Atlantic a formidable coast-line of steep-to cliffs of Laurentian gneisses, schists, and granites, with occasional Huronian rock, deeply indented by fiords, and studded along all its length by innumerable islands. These are all rocky, and many of them are high. Along continuous stretches of hundreds of miles these islands afford an inside sheltered channel. Only at one spot of this whole rugged and barren coast is there a stretch of sandy beach. The ocean face of rock rises from 500 to 1000 feet, increasing in height northwards to 1500 feet at Nain, and continuing to rise from Okkak to Nachvak Bay to a height of 3000 feet. The mountain range in the rear comes down north of that point, close to the coast, and the land rises to 5000 feet and 6000 feet, until within 70 miles from Cape Chidley, when it sinks to a continuous height of 1500 feet. The mountain chain of the interior, as it approaches

the coast at the north, contracts to 25 miles from a width of 50 miles, and is the highest land in British North America east of the Rocky Mountains. The peaks of these northern mountains are not glaciated, but angular and ragged, not rounded by attrition, but split by frost. Professor Hind's description is very graphic—"The Atlantic coast is the edge of a vast solitude of rocky hills,



NACHVAK INLET, NORTHERN LABRADOR.

split and blasted by frosts and beaten by waves. Headlands grim and naked tower over the waters—often fantastic and picturesque in shape—while miles on miles of rocky precipices, or tame monotonous slopes, alternate with stony valleys, winding away along the blue hills of the interior."

With the notable exception of the Hamilton river, the streams on the eastern slope are very short. They empty at the heads of deep fiords where the flowing water and the beating surf have completed the work of the glaciers of a former age, and have cut deep grooves in the rocky

rampart. During the short summer the wind is most frequently from the west, and the sea is then calm, but easterly winds throw against the coast a tremendous sea. The numerous inlets with steep shores cutting deeply into the land, and the clustering islands form many sheltered harbours, and navigation is not so much impeded by fog as on the southern and south-eastern coast of Newfoundland. Navigation opens on the southern shore at the end of June, or early in July, but north of Nain the coast is seldom clear of field-ice before the end of July, and all the year round bergs are passing down southwards: In July and August, the stream of icebergs is most continuous, but all through the summer they are floating down the Arctic current. The whole overflow of the Arctic basin is thrown against this coast, for the currents east and west of Greenland set upon it.

Sandwich Bay is one of the more important inlets. It is 25 miles long and 6 miles wide. It contains several good harbours, and here, at a place which still bears his name, the adventurous Major Cartwright established his trading post at the end of the last century. The most important, however, is Hamilton Inlet. This extends 35 miles inland where it narrows to one-third of a mile, and then expands into Lake Melville, 18 miles wide, and reaching 90 miles farther inland to where the Grand or Hamilton river discharges its waters. The whole distance from the headland at the mouth of the inlet to the Hamilton river is 150 miles, and the average width is 14 miles. At the narrows is Rigolet, the chief post of the Hudson's Bay Company in the district. The country round is bold and rocky, especially on the south shore where the Mealy mountains rise abruptly 800 to 1200 feet from the waters of the inlet.

Only one river is worthy of mention on this coast,

the great Hamilton river, which practically drains nearly the whole of Eastern Labrador. Its tributaries rise in large lakes on the interior plateau, and its head waters interlock with the sources of the Koksoak and George rivers which discharge into Hudson's Strait. From its farthest source to its mouth the distance is about 600 miles. Like all the rivers of Labrador it flows on the interior plateau in an even bed, on the surface and not in a deeply cut valley; but in its lower course below the falls it flows in a precipitous rocky valley deep below the surface of the surrounding country. The great falls are 215 miles from the mouth of the river, and commence where it first sweeps down from the central plateau. In a distance of 12 miles the river falls from a lake 1660 feet to the mouth of a gorge only 900 feet above the sea—a drop of 760 feet. Four miles above the great cataract the rapids commence, and, within that distance, the river rushes swiftly down until it reaches the head of a precipitous gorge, at right angles to its general course, into which it plunges with a final fall of 302 feet.

Through this deep and gloomy cañon the river sweeps in foaming rapids in a zigzag course of about 10 miles, and then passes into a narrow valley with steep sides deeply incised into the table-land, down which it flows swiftly for 50 miles to quiet water at Winokapau Lake. From the lake it passes in rapids, and falls down the remaining height in its course of over 120 miles, and flows into the sea-level at the head of Melville Lake. The ascent of the river is very arduous, owing to the swift current and the precipitous sides of the valley in which it flows. In some places the whole valley is less than half a mile wide, and perpendicular walls of rock rise from 400 to 600 feet sheer from the river, which

in the course of ages has cut its way back from the inlet.

These falls were first seen by Mr. McLean in 1839. Father Babel, who spent some seasons with the Indians on the Hamilton, about 1870, visited them. In the summer of 1891 two parties from the United States succeeded in reaching them, and described them in communications to the periodical press. In 1893-94 Low and Eaton wintered on the North-west river, and in the following season explored the Upper Hamilton; and the fullest description of the Grand Falls is in Mr. Low's report published in 1897.

Climature

The climate and soil do not admit of agriculture north of 51° . The surface of this ancient tableland seems to have been protected from sub-aerial action, and the glacial period has lingered so late that the soil is thin. There is no grass for cattle, and its place is supplied by reindeer-moss and lichens. Edible berries, such as gooseberries, cranberries, raspberries, currants, whortleberries, cloudberry, grow everywhere in great abundance. Potatoes will grow at the head of Hamilton Inlet and at Nain. The Moravian missionaries cultivate during the short summer a few garden vegetables by covering them at night. There the average annual temperature is 22.5° Fahr., that is 9.5° below freezing-point, while further south at Hopedale it is 27° or 5° below. In the north, on Hudson's Strait, the climate is Arctic, and on the unsheltered plateau it is very cold. Along the Atlantic coast easterly gales are in winter very severe, sending against the shore a heavy swell which sometimes breaks over islands 30 feet high. The fishermen retire after

the fishing is over up the valleys into sheltered spots, and carry on fur-hunting during the long winter. It is not that the winter temperature is so low compared with other places where agriculture is possible, for at Rigolet, on Hamilton Inlet, the mercury never falls below -40° Fahr.; but it is the shortness of the summer and the frequent summer frosts which prevent the cultivation of vegetables.

The fishermen of the Atlantic coast profess to prefer the winter season when they retreat up the valleys for perhaps 50 miles or more. They find abundance of food fishes—trout, whitefish, ouananiche, or land-locked salmon—and may catch them easily through holes in the ice. Innumerable geese breed in the north, and these, shot by the residents in the fall, are hung up to freeze. On the coast eider-ducks, loons, divers, widgeon, teal and other water-fowl are very abundant, and a supply of those suitable for food may be preserved by frost all through the winter. Partridges are very plentiful in the interior, and on the coast the choicest of the food-fishes of the sea come to the feet of the inhabitants. Caribou are scarce in the south, but the Iceland moss is the support of herds of reindeer in the far north. The winter residents also hunt, and trap for their skins, foxes, otter, beaver, mink, marten, and lynx; so that Mr. Low concludes that the lot of the residents at Labrador is more enviable than that of the poor of large cities. These northern climes are, however, unsuited for the “submerged tenth” of civilisation. Nature is stern in the north, and quickly eliminates the idle and thoughtless. The permanent residents are frugal, moral, good-natured, and intelligent. They are tall and strong physically, and their appearance testifies that the climate is healthy. The Labrador coast is a very important dependency of Newfoundland, for more than one-fourth of the total fishery product of the

colony is derived from thence, and the proportion is annually increasing. In the fishing season, from 20,000 to 30,000 fishing-folk, men and women, leave Newfoundland for the harbours of the coast of Labrador. The favourite inlets are crowded with fishing craft, not only from Newfoundland but from Canada and the United States. There are ten to fifteen stations along the coast for buying fish, and temporary settlements are made, where the fish caught are cured and dried and shipped for the most part to the ports of final consumption in the West Indies, Brazil, or western Europe.

Besides this floating population there was, according to the census of 1891, a resident population in eastern Labrador of 4126. Of these 2719 were English, and 1417 were christianised Indians—Eskimo, converted by the Moravians; all of whom get their living by fishing. The cod of this coast are very large and fine; for along it, about 15 miles outside the islands, extends a narrow bank exceeding 7000 square miles in area, over which the Arctic current sweeps its treasures of “living slime”—the food of fish. In July the capelin arrive blackening the water by their numbers and throw themselves on the shore in myriads followed by the voracious cod. The cod will not take bait while the capelin are running, but are caught in enormous seines. Later in the season, after the capelin disappear, they are taken by the hook. The stations do not extend beyond Nain, but the fishing vessels follow the fish when they strike in all along the coast as the ice clears away through the summer. Besides cod, herring and salmon are taken in their season, and in spring the seal fishery affords employment.

In the fall the large floating population go back to their homes, and the winter residents gather at the chief

harbours. Two mails go in the winter by courier to Battle Harbour, and one as far as Cartwright on Sandwich Bay. Beyond that, there is no communication in winter, the inlets are all frozen over and the field-ice sets in upon the coast blocking it from November until July. The Quebec boundary at Blanc Sablon marks a real division; for east of that line French is seldom heard.

It is impossible to write or speak of Labrador without a tribute of respect to the Moravian Brethren. They came upon this desolate coast about 1764 and made their first settlement at Nain, from whence they have extended their work among the Eskimo. Their settlements are Hopedale—the most southern,—Zoar, Nain, Okkak, Hebron, and Ramah on Nachvak Inlet—the most northern. The Eskimo of the coast are collected round their stations. They had been embittered against the whites by centuries of injury—the very name of Labrador records the humiliating fact that it was as man-stealers that Europeans first appeared upon those coasts. The Moravians at first found it difficult to approach the Eskimo, who did not believe that a white man could be anything but an evil being. Now there are very few heathen among them on the whole peninsula, and they have become a harmless and industrious people, working at their business of fishing and hunting, and grouping themselves around the Moravian Brethren, who teach them, up to their needs and capacity, the arts of civilisation. They are very different from the Indians. They are cheerful and good-natured in disposition and industrious in habit. They are very fond of music, and Captain John Davis relates how they would gather around to listen to it. That was 300 years ago, and they have still the same love of music. Dr. Grenfell of the Medical Mission reports that when he arrived on the coast in his mission

ship, a number of them came aboard and squatted round in the hold, while one of their number played excellently on the ship's harmonium, and others performed on two concertinas and two cornets, and the rest sang, in parts, hymns in their own language to English tunes. They will play on the violin in first and second parts, and have a natural appreciation of harmony. They are not increasing, for, under the influence of European food and clothing, their natural hardihood is weakened. Mr. Low confirms the reports of some other explorers that the Eskimo are not short in stature. They are from 5 ft. 6 in. to 6 ft. tall, but their breadth and the clothing they wear detracts from their height. They can all read and write in their own language.

The Indians of Labrador are of Algonquin stock, and are Montagnais south of Hamilton Inlet and Nascopies at the north. They have all been christianised by the Anglican missionaries from Hudson's Bay, and the Roman missionaries from the St. Lawrence. The Christian Indians nearly all read and write in the syllabic characters invented for them by the missionaries, and it is not unusual to find at the portages letters written with charcoal on birch bark, fastened up for the information of travellers.

Further remarks on the northern and western shores of Labrador will be found in the chapter on Hudson's Bay, and in the chapter on Quebec, Southern or Quebec Labrador is treated. The value of the fish products of the eastern coast is included in the figures of the exports of Newfoundland. The present chapter is based very largely on information contained in the reports of Mr. A. P. Low and Dr. Bell of the Geological Survey. The volumes published by Messrs. Packard and Stearns, and by Professor Hind and Dr. Grenfell, are of much value.

History

That the Northmen must have visited Labrador in their voyages to Vinland in the tenth and eleventh centuries cannot well be doubted; but there is nothing recorded to suggest that they ever attempted to settle on that very uninviting coast. They are generally believed to have given the name Helluland to the country—a name singularly inapplicable; for though Labrador is a country of stone and rock, it most certainly is not “a land of stony flatness”—*terram saxeæ planitiei*; for that is Rafn’s translation of “Helluland,” the descriptive name which Leif Ericson gave to the territory he saw. The coast is not such as to suggest any idea of flatness at first sight. After the Northmen, the first Europeans to reach the north-east coast were the Cabots. They, in their second voyage in 1498, sailed along it northwards in the hope of finding a passage to Cathay. Their expedition must have reached Hudson’s Strait; and from indications on Ruysch’s map, elsewhere referred to, they must have attempted unsuccessfully to enter the strait before turning southwards. There is nothing positive in the records or maps to show that Cortereal, who followed soon after the Cabots, was ever on the coast of Labrador, either on his first or second voyage. The Cantino map of 1502 shows the east coast of Newfoundland, and Cape Farewell in Greenland, but no land between; and the indications on that map are that he struck directly from Cape Farewell to the Newfoundland coast, as Leif Ericson probably did. The Labrador coast is in fact barred from the east until late in the year by a continuous stream of ice, sweeping down with the Greenland current, as explained in previous chapters, and it is not probable that either voyager entered the pack. There is, however,

in Kunstmann's Atlas a reproduction of a Portuguese chart, dated 1502-4, showing an island marked Terra Corterialis, and a small piece of coast behind it marked Regalis Domus. These lines are repeated in the Ptolemy of 1511, and suggest that some Portuguese sailor may have penetrated into the Strait of Belle-isle; but they are not found on any other map, and Newfoundland was delineated as part of the mainland until Jacques Cartier's time. There is always, however, a deep bay (La Grand Baie) marking the place of the Strait of Belle-isle.

Seeing that Labrador is so near Europe, a singular amount of mythology has gathered around its scanty history. There are, for instance, the Basque stories, and, among what are called the "traditions of the coast," is the story that Cabot found a Basque vessel there. This is an evident transference of an experience of Cartier. Then there is the story, based on a few incidental words in Peter Martyr's letter, that the Indians met by Cabot on the coast called the cod by the Basque name *baccalaos*—a word no more Basque than Spanish or Portuguese. It is also asserted in a general way, without citation of any evidence, that the north-east coast was well known to the Basque whalers before Cabot or Columbus discovered America.

It is beyond doubt true that the Basques, both of France and Spain, were very early upon the coast, but there is no evidence that they preceded the Bretons in 1504. They carried on the whale fishery at the time America was discovered, and they followed the whales far out to sea; but the assertion that they were on the American coast as early as 1450, and that Cabot and Cortereal met their ships there, is without foundation. It is hard to prove a negative, but it is destructive to history to make positive statements without adducing a single

historical fact in support of them. St. Sebastian was the great centre of Basque shipping, and both Kohl and Estancelin quote Navarrete, to the effect that he had searched the annals of St. Sebastian and of the province of Guipuscoa, and that they showed that the Basque whale fishery on the coasts of Newfoundland did not commence before the return of Stephen Gomez' expedition. Beyond question, Cabot or Cortereal did not encounter Basque vessels on the American coast, and no name nor date has been cited to show the contrary.

Then there are myths connected with the French claims on Hudson's Bay. For instance, that in 1656 the sovereign council of Quebec sent Jean Bourdon to Hudson's Bay by sea, and that he went there and took possession in the name of the king of France. This is effectually disproved by the Jesuit Relation of 1658, which records the arrival of Bourdon's vessel at Quebec in 1657, and states that he did not go beyond latitude 55°, where he was stopped by ice, and that he therefore returned, having lost some of his people killed by the Eskimo. The year is generally erroneously given as 1656. Again it is asserted that Père Dablon and the Sieur de Vallière went overland to Hudson's Bay in 1661; but in the Jesuit Relation of that year a full account is given of this expedition in a letter from Père Dablon, dated from Lake Nekouba, a little south of the height of land, the utmost point they reached. They did not therefore cross the height of land. It is, moreover, clear in the Relation of 1672 that Father Albanel was sent to make a "discovery" of the bay, to learn its situation and distance, and that his was the first expedition to succeed in reaching it from Canada.

Then, in 1841, the Literary and Historical Society of Quebec published a memoir, by a resident on the Labrador

coast, giving, what the author called, the "traditions of the coast." This memoir is a treasury of mythology, and the statements made have been copied into most of the later books: and here it may be remarked that a coast without permanent inhabitants can have no traditions, and that settlers in after years, in a wild country without books or records, are not in a position to know more of its previous history than any one else. Most of the statements made in this memoir have been incidentally treated elsewhere; it is only necessary now to refer to those concerning the port of Brest. It is stated that Brest was founded a hundred years before Quebec, about A.D. 1508, and that it contained 200 houses and 1000 permanent inhabitants all the year round, a number probably trebled in summer; that in 1630 a grant was made of Bradore Bay *en seigneurie* to a Count de Courtemanche, who had married a daughter of King Henry IV., and that the town then fell into decay. Louis Roberts's *Dictionary of Commerce*, published in 1600, is cited to the effect that Brest was the chief town of New France, the residence of a governor, almoner, and other high officials, with many other particulars showing the importance of the town.

The real facts concerning Brest are that it was a harbour well known to the fishermen. Jacques Cartier was there in 1534, but mentions no town, nor fort, nor governor. He calls it the "Island of Brest" and the "port of Brest." Jean Alphonse in his *Routier*, about 1542, mentions Blanc Sablon, but not Brest. If it had been a settlement he could hardly have failed to notice it as the only settlement on the coast. Champlain does not once mention the place, though it, like many other harbours without inhabitants, is on his map, and he wrote from 1600 to 1632. The port was in Esquimaux

Bay, not in Bradore Bay, and on the old French maps Esquimaux Bay is often called Vieux Fort, and Old Fort Island of our maps was called Vieux Fort. It is at the mouth of the bay, but Stearns saw no remains of a fort, nor even of buildings upon it. He resided on the bay for a year, and the settlers told him that they had seen remains of houses on the south shore near the mouth of the bay; but he did not find any remains there. The name indicates that there must have been an establishment, probably a summer fishing station there. The particulars of the grant of Bradore are in the public records at Quebec, and it is beyond question that there was no Count de Courtemanche. The only grant was made in 1702 to Augustin Le Gardeur de Courtemanche, who was born in Quebec in 1663, and married the widow of Pierre Martel. Her maiden name was Marie Charest, and she was the daughter of a tanner at Levis, opposite Quebec. He married her in second nuptials in 1697, and in 1704 he made a voyage to Labrador, and, in a report to the Governor, he described the coast from the Kegashka to a point beyond the strait. He mentions Esquimaux Bay, but not Brest, which ought to have been there if it were a town; and he describes Bradore Bay, then called Baye des Espagnols, where he found the vestiges of an establishment for rendering blubber. He found no inhabitants on the coast. In 1712 his grant was renewed and its extent curtailed. He built a fort there, and he called the bay Phelyppeaux Bay, from the name of the minister, and the fort, Pontchartrain, from the minister's territorial title. Phelyppeaux was minister of Marine from 1699 to 1715. The first grant on the coast was made in 1661 of the Seigniorship of Mingan to François Bissot, and the grant to Courtemanche, whose wife was Bissot's grandchild, was the second. After that

many grants were made for limited periods from Cape Whittle eastwards far beyond the Strait of Belle-isle, and on the opposite coast of Newfoundland. These were worked by the grantees, who were mostly Quebec merchants, and a brisk business was carried on. It was under the English régime that the coast fell into the hands of a monopoly, and was eventually almost abandoned to the Hudson's Bay Company. The correct title of Louis Roberts's work referred to in the memoir is given in Lowndes as *The Merchants' Map of Commerce*, and the first edition was published, not in 1600 but in 1638. With respect to North-east America the work is full of errors. The town of Brest is given as the capital of Terra Corterialis; the chief town of the region of Norumbega bears the same name; the chief towns of Nova Francia are Canada and Sanguinai. All these towns are equally mythical.

Returning once more to history, the name Labrador presents much difficulty. It was not given by Cortereal. He stole a number of Indians from Newfoundland; and from the descriptions given by Cantino and Pasqualigo, who saw some of them in Lisbon, they could not have been Eskimo. In the letters written at the time, both the writers record the fact that the king of Portugal was impressed by the suitability of these Indians for labourers or slaves, and this is the most rational explanation of the name. It is on the earliest maps, though not on Cantino's, as Terra Laboratoris, De Lavrador, and Labrador. The last is the Spanish spelling of the same word, and means labourer, so that Labrador might be freely translated as "Slave Coast." A map dated 1534—the "Wolfenbutter map"—contains the only attempt at an etymology, in a note to the effect that the country was discovered by the English, and a labourer (Labrador) from the Azores

among the crew saw it first. The "tradition of the coast," however, modifies this theory by reporting that "one Labrador, a Basque whaler from Navarre in Spain, did penetrate through the Strait of Belle-isle as far as Labrador Bay some time about the middle of the fifteenth century, and eventually the whole coast took its name from that bay and harbour." The fact is, that Bradore Bay is a name which dates only from the English occupation, and is not found on the early maps or in the French authors. In the *Geographical Journal* for February, 1897, a Portuguese writer states that private documents have recently been found to indicate that in 1492 the king of Portugal sent one João Fernandes Lavrador to discover lands across the ocean. The documents are not appended to the paper.

The early English voyages of discovery were to the coasts north of Labrador. The English were searching for the north-west passage, and sought for it more to the north. Frobisher saw the entrance of Hudson's Strait. Davis, in 1587, crossed the mouth of the strait, and sailed down the coast of Labrador to latitude 52°, having landed at Davis' Inlet and Hamilton Inlet before returning to England. Weymouth, in 1602, sailed for some distance into the strait, and afterwards coasted along Labrador. The state of English knowledge is shown by the Hakluyt map of 1600, and was limited to the existence of a strait; but the Portuguese maps of an earlier date not only show all the coast of Labrador named, but even indicate a knowledge of Hudson's Bay, which Hudson did not enter until 1610. When the Portuguese ceased to frequent the north-east coast, and the French and English began to make maps, all these names disappeared.

When at the peace of 1763 Canada was ceded to Great Britain, the whole of Labrador, as far up the gulf

as the St. John river, as well as the Island of Anticosti, and the Magdalen Islands was annexed to the Government of Newfoundland. This became a grievance to the proprietors on the coast, because the grants had been made under French law, and much confusion arose because of the introduction of English law ; so that, by the statute commonly called the Quebec Act of 1774, Canada was extended to its ancient limits. In the meantime, English merchants at Quebec bought out the old French grants and worked the fisheries for a while ; but eventually the whole region passed under lease, first to the North-west Company, and then to the Hudson's Bay Company, whose trading posts still exist at convenient points along the coast. In 1809 the boundaries of the province of Quebec were again contracted to the River St. John, and Southern Labrador reverted to Newfoundland ; but finally, in 1825, the boundary of Quebec was extended to Blanc Sablon at the Strait of Belle-isle, its present limit.

North of the Strait of Belle-isle the coast was uninhabited when, in 1771, the Moravian Brethren founded at Nain the first of their missions to the Eskimo. The eccentric Major Cartwright settled soon after at Sandwich Bay, where he carried on, for many years, trade with the Eskimo. Settlers from England were established on Hamilton Inlet in 1777, and found there the remains of the French stations. A few years later the Quebec merchants established posts there. At Eclipse Harbour, close on latitude 60° , the American Government expedition of 1862 was stationed to observe the eclipse of that year. Practically the only settlers north of Hamilton Inlet are at the Moravian and Hudson's Bay stations.

NOTE TO CHAPTER XXI

Further details will be found in the following publications :—

BELL, Dr. R.

The Labrador Peninsula, with a map. Scottish Geographical Magazine, July, 1895.

PACKARD, A. S.

The Labrador Coast. New York, 1891.

LOW, A. P.

Exploration through the interior of the Labrador Peninsula. Geographical Journal, vol. v., June, 1895.

STEARNS, W. A.

Labrador, a sketch of its people, its industries, and its natural history. Boston, 1884.

And the following reports of the Geological Survey :—

LABRADOR PENINSULA.

A. P. Low, 1894, 1895.

COAST.

R. Bell, 1884. A. P. Low, 1894.

CHAPTER XXII

NEWFOUNDLAND

NEWFOUNDLAND is an island, one-third larger than Ireland, situated at the mouth of the Gulf of St. Lawrence, which it protects from the full sweep of the North Atlantic Ocean. It is the easternmost part of North America, and reaches one-third of the distance across to Great Britain. It is described with approximate accuracy as being shaped like an equilateral triangle, but the north-eastern side of this imagined triangle is so profoundly indented by deep and wide bays that the line on that side would inclose a large extent of water. Newfoundland extends from $46^{\circ} 35'$ to $51^{\circ} 40'$ north latitude, and from $52^{\circ} 35'$ to $59^{\circ} 25'$ west longitude. St. John's, the capital city and easternmost port of the island, is 1675 miles distant from Cape Clear in Ireland; it is about as far distant westwards from Cape Clear as Moscow is distant eastwards. From Cape Race to Montreal, at the head of navigation on the river St. Lawrence, the distance is 1013 miles. The island from Cape Anguille to Cape Spear—the broadest part of its base—is 316 miles wide from west to east, and on its western side the distance from Cape Ray, the south-west point, to Cape Norman, its northern apex, is 317 miles. The total area of the island has been calculated to be 42,000 square miles. The area

of Ireland is 31,759 square miles, and of Wales, 7378 square miles, so that their united areas are not equal to that of Newfoundland. The western coast of the island is comparatively straight, but the southern and eastern coasts are remarkable by profound indentations and salient peninsulas, so that few countries in the world have coast-lines so long relatively to their areas. Three peninsulas especially mark the outline of the island with a unique character—at the south-east corner the peninsula of Avalon, connected with the mainland by a neck only two miles wide; the peninsula of Burin on the south; and, on the north, the long projection from White Bay to the Strait of Belle-isle, known on the old maps, and even now, as *Le Petit Nord*. So deeply does the ocean penetrate into the land, that on many of the old maps, for nearly a hundred years after its discovery, Newfoundland was represented as an archipelago. This long coast-line is indented with numerous commodious harbours, and studded with innumerable islands, especially on the eastern and southern coasts. The general character of the coast is very rugged and bold. A rampart of steep rocky cliffs 200 to 400 feet high confronts the ocean and resists the fierce onslaught of the stormy North Atlantic. For long stretches of the coast the wall of rock appears to be unbroken, but on close approach it is seen to be cleft by fissures, which open up deep and fiord-like harbours safe and sheltered from every wind. Where the broad bays enter the land the coast may not be so forbidding, but it is still rocky and bold. Along the west coast a few miles inland the Long Range Mountains, rising in places to a height of 2000 feet above the sea-level, run far into the peninsula of *Le Petit Nord* and almost the whole length of the island; and outer ranges 1900 to 2000 feet high

run closer to the shore and give a stern and majestic beauty to the coast from Cape Anguille as far as Cape Gregory and Bonne Bay.

Newfoundland is separated from the main continent at Labrador on the north by the Strait of Belle-isle, which extends north-east and south-west for a length of 35 miles, with a breadth varying from 10 to 15 miles. A rocky island (Belle-isle) of granite cliffs 700 feet high guards the Atlantic entrance. The lighthouse (470 feet above the sea) is maintained by the Dominion of Canada. Through this strait is the most direct route from western Europe to the river St. Lawrence, and it was the first route known to the early sailors in these waters. By this strait, evidently then well known, Jacques Cartier sailed in and out of the Gulf of St. Lawrence on his first voyage in 1534. The expansion below the strait between Newfoundland and Labrador was known as *La Grande Baie* before the existence of a southern outlet was suspected, and that name lingered on the maps down to the commencement of the present century. Cape Ray, at the south-west apex of the triangle, is separated from Cape North, on Cape Breton Island, by a strait until very recently nameless, but happily called on the later Admiralty charts Cabot Strait, after John Cabot, who discovered these waters in 1497. The strait is 60 miles wide, but 20 miles of that distance is cut off by the island of St. Paul, a high-wooded island, lying 20 miles off Cape North. Cape Ray is a remarkable headland, and stands out as a table-land rising 1700 feet above the sea. Cabot Strait is a noble portal to the Gulf of St. Lawrence. The lofty land is visible from passing vessels on both sides and the passage is lighted by two lighthouses on St. Paul's Island and one on Cape Ray.

Cape Race, the south-eastern apex of the imaginary triangle, deserves very special notice as the beacon of the North Atlantic route to America—the objective point to which all westward bound ships aimed to make a landfall, and to which the great sailing routes converge. In recent years the large and powerful steamships to New York, on emerging from the English Channel, lay their course by a more southern route; but for 375 years, and during the period of sailing vessels, before the application of steam, the ocean lane outward between England and America was by Cape Race. It is the one unchanging point of the old sea charts. On the first map showing any part of the main American continent—La Cosa's in A.D. 1500—it appears under the name of Cavo de Ynglaterra, and on Ruysch's map, in the Ptolemy of 1508, it is called Cavo de Portogesi; but, with these exceptions, it is called upon every map from the (so-called) King chart of 1502 down to the present day, Cape Raso, Rasso, Ras, Raz, or, in the English corrupted form, Race. The word is practically the same in all the romance languages, being derived from the Latin "rasus," and the name was given in the very earliest times by some Portuguese sailor who knew the locality. It means "the flat cape," for it is lower and evenner than the adjacent headlands. The British Government long maintained a lighthouse there; but, in 1880, it was taken over by the Dominion of Canada. There is also an electric telegraph station from whence passing vessels may be reported. Cape Race is the most important headland in North America for many reasons, and it is the key to many of the problems of the early maps.

To attempt to describe, or even to mention, the bays

and harbours of Newfoundland would be a weary task. Only the great bays can be noted, and to all of them the same remark is applicable. They all contain numberless smaller bays, harbours, coves, and shelters for vessels. All are studded with islands, and in all there is deep water to the very shores. On the east coast Conception Bay runs 35 miles into the peninsula of Avalon; around it have clustered the oldest settlements. To the north of it is Trinity Bay, which bounds Avalon on the north. It runs 50 miles into the land and is 16 miles wide at its mouth. On the south-east shore of this bay is Heart's Content—the landing-place of the Atlantic submarine telegraph cables. Next northwards is Bonavista Bay, marked on the north by Cape Freels, and on the south by Cape Bonavista. The bay is 39 miles wide between these two headlands; it extends 30 miles inwards and is full of islands. The headlands are not high, but are rocky. Cape Bonavista is supposed by some authorities to be the landfall of John Cabot on his first voyage, and to have been named by him. There are many reasons why this cannot have been the case; it is sufficient to remark here that the name is not found on the earliest maps. It appears first on a map by Viegas in 1534, and as a Portuguese word, Bõavista. Notre Dame Bay, the next on the north, is 45 miles wide between its headlands Fogo Island and Cape St. John. It also is studded with islands. At Tilt Cove on the north side near Cape St. John are large copper mines. White Bay, which succeeds, cuts off the peninsula of Le Petit Nord from the main island on the east. Hare Bay, on the farthest north, is a bay with bold and lofty shores very little frequented. Cape Bauld, the extreme north point of the island, is on Kirpon Island, often mentioned by the early mariners

under the name of Quirpon or Carpunt. The so-called French shore continues from Cape St. John on the east side, round by Cape Bauld on the north, and down the west coast to Cape Ray, its most southern point. The blight of the diplomatic blunder of Utrecht in 1713 has prevented settlement on this coast and kept the country a wilderness. A few fishing stages and an occasional lobster-canning establishment are poor results on so long



MOUTH OF THE HUMBER RIVER.

a stretch of coast for the four hundred years since the discovery of Newfoundland. Following down the west coast from the north are St. John's Bay and Bonne Bay. All the coast is uninhabited down to the bay of Islands. This bay is remarkable for its magnificent scenery, unequalled by anything upon the whole Atlantic coast of North America. Three lofty islands guard the entrance—one of them, Guernsey Island, rises sheer up 1000 feet. The bay is encircled by mountains 2000 feet high, and it searches in among them in solemn fiord-like arms.

The river Humber falls into this bay, and near the Humber arm Blomidon cliff rises—sheer up 2125 feet—the western termination of a range of hills which follows up the river valley. The bay has safe anchorages and harbours, and settlements begin to form around it; for the valley of the Humber is rich, and minerals abound in the hills. St. George's Bay, the last important bay to the south, is 35 miles wide and extends 50 miles into the land. The most important settlement on the west coast is at the head of this bay. It is bounded on the south by Cape Anguille, one of the loftiest headlands on the coast. There is but one good harbour in this large bay, that at its head, and there are few islands in it.

At Cape Ray the French shore ends, and from that point along the south shore and round by Cape Race to Cape St. John, it has been possible for the colonists to make settlements uninterrupted, at least by French interference, their only difficulties have been with the mother country. About 7 miles east of Cape Ray is Port aux Basques, where, in 1866, the first Atlantic telegraph cable crossed to Cape Breton. This harbour is the terminus of the railway which was completed in June, 1897. A connection will this year be made by a first-class steamer with Sydney, Cape Breton, the eastern terminus of the Intercolonial railway. The passage will be made in five or six hours, and the port of St. John's will then be in close running connection with the continental railway system. The distance from Liverpool to New York is 3563 miles, while from Cape Clear to St. John's it is only 1675 miles, and the project is, by extension of the railways on both sides of the ocean, to shorten the ocean portion of the passage by 1800 miles.

The south coast of Newfoundland is studded with innumerable islands; the Burgeo islands, the Ramea islands, and the islands in Fortune Bay figure in the Spanish and Portuguese maps as the 11,000 Virgins—a name which has disappeared from the coast unless it has been transferred to the Virgin Rocks. Fortune Bay is much frequented, and has many settlements upon its shores. It penetrates 65 miles inland and is 35 miles wide at its mouth. Like the other large bays it abounds in harbours, coves, and shelters for fishing craft. The French islands of St. Pierre Miquelon lie off its mouth. East of Fortune Bay opens up the great bay of Placentia lying between the peninsulas of Burin and Avalon. It is 40 miles wide at its mouth, and reaches 60 miles inland, abounding, as do all the other great bays, in harbours and islands. On the eastern side of the bay is the town of Placentia, in the days of French supremacy the seat of French power but now of much reduced importance. The Atlantic telegraph cables are landed at Placentia Road, and the lines pass from thence overland to Heart's Content in Trinity Bay. Six cables cluster here, passing from Sydney by way of St. Pierre Island. The town of Placentia is connected by a railway with St. John's. St. Mary's Bay, 20 miles wide, and Trepassy Bay are the other important bays to the east. Trepassy is, in winter, of some importance; for when an easterly gale may have blocked St. John's harbour with field-ice, vessels may find shelter there, and there is a good road from thence 70 miles long to St. John's.

Geology

Although Newfoundland is a country of coast-lines and harbours, so that even its electoral districts are

defined upon their sea fronts alone, a careful survey has been made of its geological structure. Speaking generally it consists of two unequal areas—an area of Huronian rocks occupying the south-east corner and the peninsula of Avalon, and an area of predominant Laurentian extending over the remaining two-thirds of the island. The dividing line is a diagonal beginning at Cape Freels, the northern headland of Bonavista Bay, and running in a generally south-westerly direction across the country to and along the western side of Fortune Bay—and here it may be observed that all the physical features of the island are on a similar diagonal plan; so that, whether it be the mountains and ridges, or the valleys and rivers, or even the outcrops of the rock formations, they will all be found to run upon a diagonal north-east and south-west plan. The south-east or Huronian area contains three small nuclei of Laurentian gneiss, but is characterised by Huronian rocks consisting of slates, quartzites, and slate conglomerates with large areas of Lower Cambrian beds, designated as Primordial in the early surveys, and consisting of sandstones and conglomerates. These form the steep forbidding cliffs of this part of the coast, and underlie the most sterile portion of the island. The two peninsulas of Avalon and Burin are included in this area.

The remaining two-thirds of the island may be called Laurentian, from the immense preponderance of that formation; although, in fact, it contains important areas where the whole series of rocks from Upper Cambrian to the true coal-measures are displayed. These areas are bands along the coast, or troughs along the river valleys; but the main mass of the country, and its chief mountain chains are Laurentian similar to the Laurentian gneiss which forms the backbone of Canada.

The diagonal dividing line above described comes out upon the south shore at the western headland of Fortune Bay. From that point westwards to 10 miles beyond Cape Ray all the coast is Laurentian. At this latter point this formation runs north-north-east in a straight line along a fault almost to the northern end of the island; between the line of this fault and the west coast is a band varying from 10 to 30 miles in width according to the sinuosities of the shore line composed of upper Palæozoic rocks as high in series as the coal-measures. The chain of highlands called the Long Range is entirely Laurentian, and although it marks the character of the scenery it nowhere comes out upon the shore along the whole western coast, nor yet upon the northern point. At Canada Head, on the north-east side, the Laurentian comes out and continues along the coast to Cape Freels, excepting around the shore of Notre Dame Bay, which is fringed by an area of serpentine rocks.

While the heart of the island is thus formed of Archæan and Primordial rocks there are large areas of later formations, and upon these are the agricultural and heavily timbered lands which have of late years been opened up and made known by the officers of the Geological Survey. On the west coast the farming lands of the Codroy valley and Bay St. George are upon Carboniferous rocks. Further north, upon the marginal belt, are Cambro-Silurian rocks which extend all around by the northern cape. A trough of Upper Silurian 20 to 25 miles in width commencing at the Bay of Exploits runs diagonally across the island and comes out in two narrow forks on the south shore. The Exploits river in its whole length flows through it, and it surrounds Indian and Victoria lakes. A similar band to the south is followed by the Gander river, and in the two valleys are

large areas of good land and of merchantable timber. There is also an area of Carboniferous rocks at the head of the valley of the Humber.

Interior

It has been the misfortune of Newfoundland that, for more than 200 years, it was the policy of the British Government to prevent its settlement, and the interest of the influential class who controlled the fisheries to decry its climate and agricultural capabilities. The forbidding rampart of barren rock which guards its eastern and southern shores, and the magnificent mountainous scenery of the western coast do not in truth suggest the existence of large tracts of arable land; but the explorations of the Geological Survey have revealed in the valleys of the streams, and at the heads of the bays, large areas suitable for settlement and cultivation. Until then the interior of the island was an unknown wilderness, and even yet large areas remain unexplored; for, although the railway is now completed across the island, and hunting parties with canoes and Indian guides may follow up the rivers and cross the portages over to the westward streams, no white man since Cormack in 1822 is reported to have crossed the main island at its widest extension on foot. So far as known the interior is an undulating plateau of no great elevation, for the most part covered by marshes, interspersed with patches of woods, and studded with countless lakes and ponds. There are also large areas known locally as "barrens," consisting of rock generally covered with lichens or caribou moss, with shallow pools, and small streams, and patches of low pines and larch (locally called juniper) where there is a little soil in sheltered hollows.

Ridges, generally bare of trees, run across this plateau in a north-east and south-west direction and terminate as the headlands of bays giving an undulating appearance to the interior of the country. From the plains rise occasional high isolated peaked hills, called locally "tolts," to a height of 1500 to 2000 feet.

The most important range of mountains is the Long Range running near the west coast and rising often into peaks 2000 feet high. A shorter range runs between this and the shore starting from Cape Anguille—not of Laurentian age but Silurian and Carboniferous. The Blomidon Range breaks off from these and borders the valley of the Humber composed also of the later formations. Another range called the Middle Range extends across the island from Notre Dame Bay to Fortune Bay. The peninsula of Avalon is very hilly, and is traversed by two high ranges. Few peaks rise anywhere upon the island higher than 2000 feet.

Hydrography

Newfoundland is a country abounding in waters. It has been calculated that one-third of its surface is covered with water. From any elevated point will be seen in all directions lakes, rivers, and brooks in countless numbers. The highest land is on the west and south, and all the larger rivers except the Humber flow to the north-east coast.

Of the rivers the largest is the Exploits river, 200 miles long and draining an area of 3000 to 4000 miles. It rises at the extreme south-west point of the island within 12 miles of Cape Ray and flows north-east into the bay of Exploits, a sub-bay of the great Notre Dame Bay. The Gander river rises also near the southern

coast, and flowing also in a north-east direction, falls, after draining an area of 2500 miles, into another sub-bay (Gander Bay) of the same great bay of Notre Dame. The third large river is the Humber, which flows in an opposite direction, but between the same points of the compass. It rises near the head of White Bay on the east coast and falls into Bay of Islands on the west.



VIEW ON THE HUMBER RIVER.

The head waters of the streams almost touch in the interior, and some of the lakes drain in opposite directions ; but, while these afford canoe routes for hunters, all communication before the railway was built was by vessels along the coast.

Timber

For a considerable distance inland from the west and south coasts the trees are generally fir and spruce of

stunted growth, but there are large tracts of heavily timbered land at the heads of the bays and in the valleys of the numerous streams. Upon the Bay of Exploits, the river Exploits, the Gander river and Gander Lake, and the river Humber; along the west coast, upon St. George's Bay, and in the valleys of the Codroys timber is abundant and good. Lumbering operations are extending rapidly. The trees found are chiefly white and yellow pine, white, black, and red spruce, fir and tamarack, birch, ash, and red maple. Cedar, beech, oak, and elm are not found in the forests.

Climate

The climate of Newfoundland varies very much. The Arctic current running along the eastern coast lengthens out the spring and, in winter and early spring, the east winds blow masses of field-ice into the bays and harbours, the continual stream of bergs also helps to retard the summer. Frequent fogs are borne in upon the east and south coasts by all the eastern and southerly winds. The climate of that portion of the island, while not so cold in winter or so warm in summer as in Canada, is apt to be raw and chilly rather than cold in winter and foggy and cool in summer. The average minimum temperature of eight years was 7° , and the maximum 83° Fahrenheit. These are the extreme points of range. In the interior and on the west coast the climate is different and resembles that of Canada. The spring is earlier and the summer warmer. The fog does not penetrate farther than 20 miles from the south and east coasts, and so the sky is bright and the weather clear. On the elevated barrens it is very cold in winter, but the valleys are sheltered from the colder winds. The robust

appearance of the population testifies to the salubrity of the climate.

Government

The government of Newfoundland extends not only over the island of that name but over that part of Labrador extending from Blanc Sablon at the Strait of Belle-isle northwards along the coast to Cape Chidley. The island has not yet consented to form part of the Dominion of Canada, and the British Government therefore appoints the lieutenant-governor. There are two chambers—the legislative council of 15 members, nominated for life by the governor in council, and the legislative assembly, at present consisting of 36 members, elected for four years by ballot under manhood suffrage. The administration is in the form known as responsible government by a ministry commanding a majority in the popular house.

Trade and Resources

Since the year 1887 accounts have been kept in dollars and cents, and, by a recent statute, the currency was assimilated to that of Canada and the United States, the par of exchange being fixed at \$4.86.66 to the pound sterling, or in the language of bankers the par is $9\frac{1}{2}$ per cent premium on old par.

The exports are for the greater part to foreign countries, while the importations are mostly from Great Britain and her colonies.

A reference to the tables given below will show that in 1894 the value of fishery products was \$5,144,589 out of a total export value of \$5,811,169. This will show to what an extent the resources of the colony are derived from the surrounding ocean.

VALUES OF CHIEF ARTICLES OF EXPORT FOR THE YEAR 1894

	Quantity.	Value.
Dry codfish, quintals	1,107,696	\$3,703,338
Herrings, pickled, barrels	78,376	197,551
„ frozen, barrels	56,907	56,907
Salmon, pickled, tierces	3216	51,483
Lobsters, preserved, pounds	2,306,688	312,364
Cod oil, tons	3783	264,810
Seal oil, tons	4063	276,284
Sealskins, number	284,460	227,568
Copper, ingots—regulus and green ore—tons .	28,842	236,235
Iron pyrites, tons	40,582	285,474
Lumber, feet	6357	82,641

TOTAL VALUE OF IMPORTS AND EXPORTS OF NEWFOUNDLAND,
INCLUDING LABRADOR

	Imports.	Exports.
1890	\$6,368,835	\$6,099,686
1891	6,869,458	7,437,158
1892	5,012,877	5,651,111
1893	7,572,596	6,280,912
1894	7,164,738	5,811,169

COURSE OF TRADE, 1894

	Imports.	Exports.
United Kingdom	\$2,538,942	\$1,347,425
British Colonies	3,952,046	1,366,684
Foreign Countries	1,673,750	3,097,060
	<hr/> \$7,164,738	<hr/> \$5,811,169

Population

From the nature of their occupation it is evident that this people cannot be grouped in cities, but settled in families and small communities along the coast. There are no settlers in the interior, and the French claims check settlement on the west coast; but in spite of many discouragements there are settlements at Codroy, St. George's Bay, Bay of Islands, and Bonne Bay. The life the people lead, in continual conflict with the sea, and in

presence of all the dangers of seafaring life upon an ocean vexed with frequent storms, makes them earnest and resolute in character. They are matchless sailors—skilful and daring, such men as in the old days of wooden ships raised Great Britain to the pinnacle of her naval renown. They are daily braving its dangers, and they know well all the secrets of the sea. They, beyond all other people, “go down to the sea in ships, and do business in great waters.” Newfoundland is still a great training-school for mariners, but, possibly, it is engineers and stokers that are needed under the new conditions of naval warfare. The last census was taken in 1891, and gave the following results:—

POPULATION—CENSUS OF 1891

Newfoundland	197,934
Labrador	4,106
Total population	202,040
Males in Newfoundland only	100,775
Females	97,159

POPULATION OF TOWNS

St. John's	29,007
Harbour Grace	6466
Twillingate	3565
Bonavista	3551
Carbonear	4127

POPULATION BY RELIGIONS—CENSUS OF 1891

Church of Rome	72,696
Church of England	69,824
Reformed Episcopal Church	487
Methodists	53,276
Presbyterians	1,449
Congregationalists	782
Salvation Army	2,092
Baptists and others	37
Moravians on the Labrador Coast	1,397

Education

The educational system adopted is denominational, and no other system seems to be possible with the strong sectarian feelings of the people. The government grant for 1896 amounted to \$153,585 for all schools and colleges. The total number attending colleges and schools is 34,557. There are four superintendents of education appointed by Government—one each for the Roman, Anglican, Methodist, and Presbyterian churches—and they act through separate boards in each district.

Industries

Farming has not been followed to any extent, nor is there a population suited for manufacturing pursuits. It has been too strongly asserted and too frequently repeated that there is no land on the island suitable for agriculture. Such is no doubt the case along the barrier shores which bear the brunt of the Atlantic surf. Sir Richard Bonnycastle pointed out that there is much agricultural land in the western districts and in the valleys. The fact seems to be that the danger and excitement of a fisherman's life, everywhere it can be followed, are preferred to the supposed monotony of farm work, and, on the coast of Newfoundland, the treasures of the deep are too tempting, though the fishermen themselves have not profited over much. Should a Latin motto ever be required, none more expressive of the fortunes of the island could be chosen than *Sic vos non vobis*. It is no wonder that the people are too apt to neglect all other pursuits, for here in all the bays and harbours, and at their very doors, nature, somewhat stern in many respects, presents them with millions in their

seasons of fish and other marine creatures. Out of a total population of 202,040 souls, therefore, no less than 52,502 were engaged in catching or curing fish.

The harvest of the ocean opens on the 1st of March, when the sailing vessels for the seal fishery put to sea. On the 12th the steamers leave, and all are crowded with men. There are 22 steamers from 350 to 500 tons engaged in the business, carrying from 200 to 300 men each. They are very strongly built and protected so as to force their way through the ice floes. The seals seek the field-ice carried down by the Arctic current upon which to bring forth and suckle their young. The pups are born from the 15th to the 20th of February, and are in the best condition about March 16, being fat; and they are also easy to kill while upon the ice, for early in April they take to the water. Of late years the seals have not been so numerous and the hunting is regulated by law; so that no seal may be killed before March 16, nor after April 16, and the steamers are allowed to make only one trip. The vessels are pushed into the floating ice, and when a herd of seals is seen the crews pursue them from floe to floe and kill the young ones chiefly, for from them the best oil is obtained. They are hunted for their fat and skins only. The hunters kill them with clubs, skin them upon the ice, and drag their loads to the vessels until the cargo is complete.

As the Gulf Stream is the bearer of warmth to distant shores, the Arctic current is the bearer of that wealth of ocean-born organisms generated in the cold waters of the north which is the superabounding support immediately or mediately of the food fishes of commerce. In the overflow of these waters and along the coasts they wash, cod, herring, salmon, and other fishes of commerce find

the conditions suitable for reproduction, and there also they find food convenient for them. The Banks of Newfoundland have been described elsewhere. These highland meadows of ocean are during the summer season the resort of innumerable swarms of codfish, which, issuing from the darker recesses of their unknown deep-sea homes, throng the shallower and lighter waters and flow over into the bays and coves of the adjacent coasts in such numbers as to become the staple export of the colony and the industrial support of four-fifths of its people.

In the early days of June the capelin arrive and swarm along the coast in such numbers that, with a casting-net, a man may obtain a cart-load in an hour. They stay for about seven weeks. They are small fishes six or seven inches long, and are the food of the cod, which follow hard upon them and drive them inshore. When the capelin disappear, about the 1st of August, immense numbers of squid arrive. These are small cuttle-fish which swarm on the coast and in the harbours. Occasionally they are met with of gigantic size, more than realising Victor Hugo's description of the devil-fish in his *Toilers of the Sea*. They are, however, decapods. A piece 19 feet long of an arm of one of these creatures cut off by a fisherman whose boat it had attacked is in the museum of St. John's. Another of these monsters was found dead. Its two larger tentacles measured 24 feet each, the eight shorter and thicker ones 12 feet each; the body was 10 feet long. Formidable monsters fortunately seldom encountered. After reading Dr. Harvey's account of them Homer's vivid account of Scylla in the 12th book of the *Odyssey* becomes almost realistic. The squid become in their turn for six or seven weeks the prey of the cod when the herring arrive,

and, during September and October, the codfish feed upon them until they depart for their winter homes in the deeper waters. The prosperity of the colony has always been so bound up with the cod fishery that in the language of Newfoundland the word "fish" means only cod. There are indeed "salmon" and "herring" and "haddock," but the cod are always called "fish." Upon the early maps, which are Portuguese, Spanish, or Italian, the country is called "baccalaos," the general name for codfish in the languages of Southern Europe.

Fishing on the Banks is open to all, and vessels from western Europe as well as from the United States and the neighbouring colonies share in the sea harvest. Oftentimes the passenger on an ocean steamer is surprised, as the fog lifts, to see small fishing schooners pursuing their business anchored apparently in mid-ocean. For four hundred years this treasury of food has been exploited apparently without signs of exhaustion. The foreign vessels carry away their cargoes salted green, but the colonists have only to take their fish to the adjacent shores to be dried and cured for export. The colonists do not rely so much upon the Bank fisheries, for the cod follow the capelin, squid, and herring close into the bays, and afford abundance of bait wherewith the cod may be caught nearer home.

The importance of the cod fishing will appear on reference to the preceding tables. Out of a total value of \$5,811,169, the export of dried codfish alone amounts to \$3,703,338. The fish are split, cleaned, salted, and then dried on stages on the shore, and are exported to the tropics, to Southern Europe, to the West Indies, and the Brazils. The products are entirely used up; from the livers cod-liver oil is extracted, glue is made from the skins, and the heads and entrails are utilised for the manufacture of fertilisers. The fish flakes or drying

stages used in this industry are characteristic of the settlements along the whole coast.

The total exports of Newfoundland, in 1894, were, as before stated, \$5,811,169: of this the value of fish products was \$5,144,589. It is no wonder then that the colonists have been tempted away upon the sea and have neglected the other resources of their island. The wealth earned has, however, been drawn away to other lands, and has built up the prosperity of non-resident merchants. There is a change now in progress, and other industries are beginning to be more vigorously pursued. The herring fishery is followed along the south and west shores, and the lobster-canning industry has grown from its commencement in 1873 to an export value of \$312,364. The salmon rivers, swarming with fish in old days, had been ruined but are recovering under careful supervision, and in 1894 pickled salmon to the value of \$51,483 were exported.

While it may or may not be true that the Bank fisheries show no signs of exhaustion, the Government of Newfoundland has waked up to the fact that the inshore fisheries were becoming less productive. In 1889 a Fishery Commission was appointed, and under the skilful management of the superintendent scientific regulations were enacted and enforced, not only for preventing wasteful methods of fishing but for replenishing from hatcheries areas which had been exhausted. The cod fishing had ceased to be profitable in Conception Bay and was failing in Trinity Bay, but in 1894 three hundred millions of cod ova were hatched at the hatchery in Trinity Bay, and the fishermen are now reporting shoals of small fish in places where for many years they had not been seen. Floating incubators have been established for lobsters—the ova are collected at the canning factories and are hatched and liberated to replenish the waters.

The following figures show the whole output of the hatchery since its institution in 1890 :—

COD HATCHING AT DILDO. NUMBER OF COD OVA HATCHED AND PLANTED	
1890	17,100,000
1891	39,650,000
1892	165,244,000
1893	201,435,000
1894	221,500,000
1895	188,000,000
	<hr/>
	832,929,000

The grand total of lobsters hatched and planted from 1890 to 1895 was 2,610,475,000. This far exceeds anything which has been done elsewhere.

Mineral Resources

It was pointed out by the officers of the Geological Survey many years ago that the similarity of some of the rock formations of Newfoundland to those of Canada and the adjacent maritime provinces gave promise of containing similar minerals. In 1857 copper was discovered at Tilt Cove and works were built, and in 1875 another mine was opened not far distant. In 1894 from these mines were exported 284,460 tons of green ore and regulus. Lead was discovered on the west coast, but the French complained that the works infringed their treaty rights and work was stopped. Iron pyrites was exported in 1894 to the value of \$285,474. The large area of serpentine rocks gives promise of asbestos, and several mines of it have been opened. Immense deposits of gypsum exist on St. George's Bay and along the Codroy rivers, but the most promising among the prospective mining industries are the coal areas observed

first by Jukes in 1838. These may be considered as an extension of the coal-fields upon the neighbouring shores of Cape Breton. The seam he found was on the south of St. George's Bay, three feet in thickness, and many other seams have been discovered of varying thickness from a few inches to six feet thick, but none have yet been worked.

Game

It seems strange that there should exist so near to England a country like the interior of Newfoundland abounding in large game like the caribou. They migrate in great numbers at regular seasons, spending the winter in the south and moving to the north to bring forth and rear their young. The favourite hunting-grounds are upon the "barrens" where the reindeer moss grows in abundance. Wild geese and ducks are very plentiful, and the numerous lakes and streams in the interior are their favourite resorts. Ptarmigan are also abundant. The streams are full of trout, but the salmon rivers will require a long rest before they recover.

Means of Communication

Newfoundland was settled as a fishery, and all the settlers were fishermen along the coast. Under the evil laws elsewhere described the Crown refused to grant lands until 1813, and it was not until 1825 that the first road, nine miles long, was built. Since that time roads have been extended to points in the peninsula of Avalon; but elsewhere all communication has been by vessels along the coast. At last, in 1881, the railway was projected which is opening the interior. Trains have been running for some time from St. John's to Placentia and to

Harbour Grace, and this summer the road has been completed to its terminal point. It follows the valley of the Exploits river for some distance and strikes across to the valley of the Humber, which it follows down to the head of Humber Arm and thence in a south-west direction to the head of St. George's Bay and to Port aux Basques, seven miles east of Cape Ray. It opens up the best part of the interior of the island and the coal areas of the Humber and St. George's Bay. The total length of this road is 484 miles, and it will this year connect with Sydney, Cape Breton, by steamer.

Communication to all points along the coast is now made by lines of steamers. One route follows the east coast to the north as far as Battle Harbour in Labrador, the other goes along the south coast and up by the west as far as Bonne Bay. Regular steamship communication is also established with Liverpool, England; Halifax, Nova Scotia; New York, and Montreal.

St. John's, the capital of Newfoundland, is a city of 29,007 people, situated on the north side of one of the most remarkable harbours in America, one mile long by half a mile wide, perfectly land-locked, deep, and accessible at all states of the tide for the largest ships afloat. The entrance is through a cleft in the wall of cliffs which abut on the ocean all along that part of the east coast. It is scarcely distinguishable at a little distance, and a stranger is surprised when suddenly the vessel turns inwards and passes through the "Narrows," a channel half a mile long and only 600 feet wide. Cliffs on the north 520 feet and on the south 700 feet high shut out all view of the city until the end of the Narrows is reached, when the city opens up suddenly, most picturesquely seated on a rocky slope.

St. John's is entirely devoted to the fishing business.

When the sealing steamers arrive, and at the seasons when the people at the outposts throng in to purchase supplies, it is a very busy place; but the city does not do justice to its very striking situation. It has repeatedly suffered from great conflagrations, and its inhabitants have had to bear heavy losses and great discouragements, not



ENTRANCE TO HARBOUR OF ST. JOHN'S.

only on account of fires, but on account of the failure in December, 1894, of the two banking corporations which had been carrying on the business of the colony. This misfortune was due to defects in the old system of carrying on business. Methods had been followed not suited to the present day, and the city has had to pass through a commercial collapse. The Canadian banks at once opened up agencies there, and business is once more reviving on a sounder and more modern basis. Manufactures are

also being introduced to diversify the interests of the people. A serious obstacle to the advancement of this colony has been the too general practice of people who have made money leaving it to live in England. No country can steadily prosper when its successful men are drained away and the realised wealth it produced is spent to enrich other lands.

St. John's is the seat of government and the public buildings are there, but its architectural adornments are the Roman and the Anglican cathedrals, two very fine buildings in the front rank of the churches of British America.

History

The history of the island of Newfoundland differs so radically from that of the other colonies of England that, with a view to making its course plain, it becomes necessary to consider it under the following heads:—

1. Discovery, A.D. 1497.
2. Attempts at colonisation made, as in the case of other colonies, by patentees, A.D. 1583-1633.
3. Period of repression of the colonists in the interest of the mercantile houses of the west of England carrying on the fisheries, often called "the merchant adventurers," A.D. 1633-1792.
4. Organisation of civil society, A.D. 1792-1832.
5. Constitutional government, conceded 1832.
6. The French shore question.

Discovery

In the bright family of the colonies of England, of those which have remained faithful as well as those which revolted from the motherland, Newfoundland is

the elder sister—elder not only by discovery, but by first attempt at settlement. The island was discovered in 1497 by John Cabot on his first voyage for King Henry VII., and, after having touched land at the eastern point of Cape Breton and raised there the banner of St. George, he sailed along the south coast of Newfoundland as he returned to Bristol, his port of departure. It should always be borne in mind that, at that date, Columbus had discovered the West India Islands only. He did not set foot upon, nor even see, the Western Continent until August 2, 1498, on his third voyage, when he discovered what is now Venezuela in South America. On his fourth voyage in 1502 he first saw the mainland of North America, in Honduras Bay, and sailed along the shore of Costa Rica. Meanwhile a second expedition had been fitted out at Bristol, also under the commission of Henry VII. and under the command of John Cabot and his son Sebastian. This expedition sailed early in 1498 and coasted the Continent of North America from Labrador to Cape Hatteras. There are many disputed questions concerning these two men and their voyages which will be found discussed at length in the authorities cited at the end of this chapter; it is only necessary to observe here that the primary title to the inheritance of the English race in the New World is derived from the voyages of the Cabots and their first discovery, prior to Columbus, of the mainland of America.

It is almost impossible in this century to conceive to what an extent the two great maritime powers, Spain and Portugal, overshadowed all others at the commencement of the sixteenth century, and the diplomatic strife which was carried on between them is more confusing because the new land discovered by Spain in the west

was supposed to be the eastern margin of the continent of Asia, where the Portuguese discoveries in the east were incessantly extending. To settle these rival claims the celebrated bull of Pope Alexander VI. was issued in 1493; but the boundary line therein laid down was modified by the treaty of Tordesillas in 1494, and a meridian, 370 leagues west of the Cape de Verde Islands, was fixed upon as the dividing line. All lands discovered were to belong to Spain if westward, and to Portugal if eastward of this line. In the defective knowledge of that period, and owing to the impossibility of ascertaining longitudes with approximate accuracy, Newfoundland was drawn to the east of this line and fell to Portugal, while the rest of America, as discovered, was claimed by Spain. On some of the earliest maps the Portuguese "sphere of influence," to borrow a recent phrase, included even Nova Scotia.

In those days Portugal was at the zenith of her greatness, and a powerful and noble family of that kingdom, the Cortereals, were sailors and discoverers while the English and French nobility were slowly recovering from intestine wars. To one of the younger scions of this fearless and enterprising family, Gaspar Cortereal, the king of Portugal granted a commission, and in A.D. 1500 and 1501 he made two voyages in the hope of reaching Asia by the north-west. In these voyages he reached as far as Greenland, and coasted along the east coast of Newfoundland and perhaps Labrador. His own vessel, and he himself, perished on the second voyage, but upon his discoveries and the bull of Alexander VI. the Portuguese based their claim to Newfoundland.

The English neglected the Cabots and their discoveries, and, besides, they were wrapped up in their

trade with Iceland, where they got all the codfish they wanted; but the Portuguese and Basques, Spanish and French, soon heard of the amazing wealth of codfish on the coasts and banks of Newfoundland, and, with a boldness and enterprise scarcely credible now, began to throng those waters with their little fishing vessels, and they were followed by fishermen of Brittany and Normandy. This accounts for the fact that the names of the prominent localities on the east coast of Newfoundland are mostly corruptions of Portuguese, while the names on the south coast reveal the predominance of the French and Basques.

Ingenious and romantic theories have been propounded concerning discoveries of America by Basque sailors before Columbus. The whale fishery of that period and long afterwards was in the hands of the Basques, and it is asserted that, in following the whales, as they became scarce, farther and farther out in the western ocean, they came upon the coasts of Newfoundland a hundred years before Columbus and Cabot. No solid foundation can be found for these assertions. The records of the Basque maritime cities contain nothing to confirm them, and these assertions are mixed up with so much that is absurd—such as a statement that the Newfoundland Indians spoke Basque—that the whole hypothesis is incredible. There is not space in the present volume to follow out such questions, nor is it possible to discuss here the alluring and romantic legends of the islands of Antillia, of St. Brandon, of the seven cities, of Stockafixia, or of Mansatanaxio. It is, however, beyond question that, from the year 1506, the fishermen of Portugal, Brittany, and the Basque provinces resorted in far greater numbers to these coasts than the English, and the nomenclature of the coast proves it to the present day,

not only in Newfoundland, but on Labrador and in Cape Breton and Nova Scotia.

Colonisation, 1583-1633

Under the firm government of Queen Elizabeth, England became united and free from foreign entanglements, and her national energy and spirit flowed over into those channels of colonisation which have resulted in the present wide expansion of the English race. Hence in 1583 Sir Humphrey Gilbert obtained the Queen's commission as governor, and a large grant of territory in Newfoundland. "He," says Hakluyt, "was the first of our nation that carried people to erect an habitation and government in these northerly countries of America." In the harbour of St. John's he found thirty or forty sail of vessels of all nations, of which number twenty were Portuguese. He set up the royal arms and took possession of the country with the formalities customary at the time. The Portuguese were foremost and warmest in their welcome, which is explained by the fact that, three years before his arrival, their country had fallen under the yoke of Philip II. of Spain. At the height of its glory it was to cease for sixty years to be an independent kingdom, and the English were at least enemies of Spain. If any state had a right to challenge Gilbert's commission it would have been Portugal.

Sir Humphrey Gilbert was lost on the return voyage, and his attempt to colonise was a failure. But more and more the English vessels resorted to the fisheries, and perhaps, although no record of the fact exists, some permanent settlers remained behind. With the reign of James I. the overflow of the English people into the

western world commenced to run steadily and continuously, and all the brightest minds around the court and among the merchants were turned towards adventures beyond the seas. In 1610 a royal charter was issued to a company, of which Lord Bacon was the chief promoter, known as "The London and Bristol Company, usually called Guy's Association." A grant was made by James of the territory from Cape St. Mary's to Cape Bonavista, and John Guy of Bristol led out, the same year, the first colony to Newfoundland. He settled on the shore of Conception Bay, built a fort, and commenced to issue decrees as governor. That struck the first note of a conflict which was to last for 150 years, and of which the echoes may yet be heard. The fishermen, merchants, and seamen who flocked to the coast for the fishing season vehemently resented anything which might seem to threaten their turbulent lawlessness, and the great merchants in England, who were profiting by the fisheries, were jealous lest the planters should in some way interfere with their operations; but, for a time, the planters had sufficient influence through the patentees in England to maintain themselves. Captain John Mason came out as governor in 1615—an able and notable man—and, in the same year, Captain Richard Whitbourne, the worthiest of mariners, came out with a commission from the Admiralty to establish order among the fishing fleet. He reported that more than 400 sail of "French, Portugals, and Biscaines," and 250 sail of English fishermen were resorting to the coast. He urged upon the Government the importance of colonising the country with permanent settlers. He was an experienced sailor, not only to Newfoundland, but to every port in Europe, and he saw the surpassing value of the fisheries. Other companies were formed and other settlements were made

about this time, but all were confined to the peninsula of Avalon. Many distinguished names were connected with those enterprises—as Sir William Vaughan, Sir George Calvert, Lord Falkland. Sir George Calvert (afterwards Lord Baltimore) spent two years in the colony at Ferryland, where he erected large buildings. The romantic name Avalon was given by him, and that name is all which remains of his efforts. Calvert abandoned Newfoundland and afterwards obtained a charter for the colony of Maryland, whose capital, Baltimore, is named after his family title.

Period of Repression, 1633-1800

In the fairy story it is the youngest sister, but the eldest sister is the Cinderella of colonial history. If Newfoundland had experienced only the healthful neglect under which the other colonies prospered, she too would have grown into vigorous life. But a strong and influential class in England was interested in harassing the settlers, in depreciating the resources of the island, and in throwing every obstacle in the way of permanent settlement. This policy came in with Charles I. and continued down to the very commencement of the present century. Captain Mason, Sir William Vaughan, and Captain Whitbourne had written favourably of the island; but from their day down to 1842, when Sir Richard Bonnycastle wrote his book, every writer described it as barren; in summer gloomy with perpetual fog, and in winter given over to excessive cold and blinding snow-storms. The west country people of England, generation after generation, drew from the fisheries of Newfoundland enormous profits, upon which prosperous mercantile establishments and noble families were built up and

sustained—in England. They considered and called them “their” fisheries, and their interests required that there should be no resident population to compete in their monopoly, to share the best fishing rooms, and to grow up to be dangerous rivals in foreign markets. The influence of this class upon the government was incessantly exercised in framing regulations and laws to choke the growth of the colony.

The confused annals of this period can only be understood by remembering the existence of two antagonistic parties, the “planters” and inhabitants on the one hand, who, being settled there, needed the protection of a government and police, with administration of justice; and the “adventurers” or merchants on the other; who, originally carrying on the fishery from England, and visiting the island only for the season, needed no such protection for themselves, and had various reasons for preventing its being afforded to the others.

If the Mother Country had only forgotten the island it would have prospered; but in 1633 the English merchants succeeded in procuring from the “Star Chamber” rules and regulations drawn solely to advance their own private interests, and these rules were supplemented, always in the same direction, by the same oppressive agency.

It was now enacted that no settler should dwell within six miles of the sea-shore; that no planter should cut down any wood or plant within the same distance from the shore; that no inhabitant or planter should take the best places in the harbours before the arrival of the fishing-fleet in the spring. Then, in the spring, the captain of the first vessel to arrive in any harbour should be fishing admiral thereof and allot the places in the harbour. In this way the fisheries were to be reserved

for the English merchants, who sent out the vessels and fishermen for the fishing season. To prevent the growth of a resident population it was ordained that no master or owner should transport seamen or fishermen to the colony other than his own crew; that all provisions, except salt, should be purchased in England to last for the whole voyage; that every master of a vessel should give a bond for £100 to carry back to England every man he took out; that no settlers or planters should be taken to the colony. To prevent the formation of any organised administration, it was enacted that all offenders should be taken to England to be tried by the magistrates of certain specified cities in the western counties; that the fishermen were to be for ever free from the jurisdiction of any government in Newfoundland. Incredible as it may seem, attempts were made to compel the resident planters to remove to some other colony, or to return to England. Orders in council were made to that effect, and the planters had to organise and resist by force the destruction of their property which had been commenced. At last permission was sent out to continue, until further orders, the planters in possession of their houses. The planters had also asked for a resident governor to command them in case of attack, and for a clergyman to administer the ordinances of religion to them and their children, but they met with no response. The government of the fishing admirals had to suffice, and violence and disorder reigned during the fishing season.

This system of government by fishing admirals is a curiosity of administration. It had existed on the coast from the first, having originated in the necessity for some form of law among the crowds of turbulent sailors of all nations who thronged the coasts in the fishing season. But this wild system was recognised by the Star Chamber

ordinances and confirmed in 1698 by Act of Parliament. The first fishing captain to arrive at any harbour in the spring was "admiral" for the season, the second was "vice-admiral," the third was "rear-admiral!" They not only allotted the fishing rooms in the harbours, but they were magistrates of the district, not only among the fluctuating summer population, but in all questions between the fishermen and the permanent residents. Inasmuch as these fishing admirals were the hired servants of the merchant adventurers the course of justice set in one direction only. The English merchants wanted no better system, and strenuously opposed every modification of it. The only appeal was to the naval officers commanding the convoy of the king's ships, and, in the course of time, the commanding officer of the squadron on the Newfoundland station was also commissioned as governor, and his jurisdiction in appeal gradually encroached on the administration of the fishing admirals.

As if these discouragements were not sufficient, the French in 1662 seized Placentia, fortified it, and made it the seat of a resident governor. Up to that date no French subject had wintered upon the island. The French Government had taken no interest in it, and, while the supremacy of the English was not disputed, the French fishermen fished unmolested, chiefly on the south and west coast. There was room and there were fish for all; but, after the French settled at Placentia, came a period of intermittent hostilities and of injuries given and received, in the course of which St. John's, Ferryland, Harbour Grace, and Placentia were taken and retaken until, at the close of the sixteenth century, all the English settlements but two were completely ruined, and St. John's utterly destroyed and abandoned. In 1697 the island was re-conquered by an expedition sent out by

William III., forts were erected and a garrison stationed at St. John's, but the island continued to be the arena of incessant strife during the subsequent wars. To relate the vicissitudes of this warfare is foreign to the object of this book; it is sufficient to call attention to the dispersion of the colonists consequent upon the repeated destruction of the settlements as another cause of the tardy growth of the struggling colony. The English cared only for the fisheries. It was of small importance to the western adventurers that the settlers whom they were urging to have removed to the New England colonies or brought back to England, were carried off by the French.

The peace of Utrecht in 1713 settled the dispute between the English and French as to the sovereignty of the island. It was given over in full supremacy to England. But so firmly planted in the English mind was the theory that Newfoundland should be only a fishing station, whereon to dry fish in the summer and a nursery wherein to train seamen for service at need in the royal navy, that the rankling thorn of the "French shore" was planted in the side of the colony to trouble and hinder its development down to the present day. In the treaty Spain made a claim of ancient fishing rights for the Guipuscoans (Basques), but they were never proved. As for Portugal, the domination of Spain had killed its expansion, and what energy remained after it regained independence was drawn off to the East Indies.

After the island was reconquered in 1697, some unfortunate experiments were made with garrison governors until, in 1729, Captain Osborne, R.N., was appointed. After that time, until 1825, the commanders of the fleet on the North American station were always governors of Newfoundland.

The fishing admirals had now a firm hand always over them and, by degrees, the reign of violence came to an end. The naval officers did justice in a summary off-hand way, and the colonists' position was greatly improved; still the fishing admirals ignored the justices appointed by the governors, under the pretext that they were only winter magistrates, and, in fact, the authority of the magistrates appointed by the governors did not rest on the firm basis of an Act of Parliament. Improvement was slow; for, although the governors did all in their power to ameliorate the condition of the colonists, the merchants did all in their power to thwart them, and resisted any modification of the statutes which were oppressing the colony. As late as 1799 houses erected in St. John's without license of the governor were pulled down, and it was not until 1820 that the statutory restrictions were abolished which required licenses for cultivating or inclosing ground and for building or repairing houses.

At last, in 1792, in spite of all opposition, Parliament passed a statute upon which a Supreme Court of Judicature, civil and criminal, was erected in Newfoundland. The period of confusion came to an end, and the colonists became possessed of that only stable foundation of civil society, a court of justice of unquestioned authority, to which, as is becoming, is superadded the appeal to the sovereign in council claimed by all the subjects of the British Crown.

Organisation of Civil Society, 1792-1832

The preceding history has occupied a disproportionate space because, unless somewhat fully set forth, it would be incredible that such laws should have existed. It affords an explanation why this colony—the eldest of

the Crown, with soil and climate not inferior to that of the Eastern New England States, should have remained in so backward a condition. For the teeming riches of these Newfoundland waters the great nations of Europe have fought for 200 years. Fabulous wealth has been gathered there to enrich distant countries, while the people of the colony are still poor. And yet the people are hardy, industrious, and brave. As a school for brave and skilful seamen it was so important that, for 150 years, every fishing vessel that left England was compelled, under penalty, to take out one "green man" to every five of the crew, so that braving the stormy seas of the North Atlantic in these little craft the men were formed who have carried the flag of England over all the seas. As an organised community the colony may be said to date from the erection of the Supreme Court in 1791, and from that date its history presents no points worthy of remark. It is the history of all the other colonies of England. The governor-in-council served his purpose, and in 1832 was superseded by the governor with a legislative assembly, and that did its work and was in turn replaced in 1854 by a governor assisted by a ministry holding office as in England while it enjoyed the confidence of the popular branch of the legislature. The Crown began to grant titles to land in 1813, a post-office was established, and roads commenced to be made. In 1841 the last of the naval governors gave way to Sir John Hervey who, though a soldier by profession, acted as a civil governor.

The French Shore

The preceding history has incidentally discussed the title to the island of Newfoundland; it is, however,

necessary to repeat that it was not the intention of the British Government to found a colony there. It was designed to be a great drying station for fish to be caught by English fishermen sailing in the spring and returning in the fall. During the winter it was intended to be left desolate and uninhabited. Therefore when the Treaty of Utrecht was signed, no inconvenience was expected to flow from conceding to the French the right to dry fish upon a specified extent of the coast, provided only that the sovereignty of the British Crown was established. It is also very important to remark that whatever documents, obligations, promises, or treaties may have succeeded they are all retrospective to the Treaty of Utrecht, and neither add to, nor deduct one word from, its stipulations. One exception must, however, be made. The original treaty specified an extent of coast from Cape Bonavista round by the north to *Cape Riche*, and the Treaty of Versailles in 1783 changed the locality of these rights to the extent of coast from Cape St. John round by the north to *Cape Ray*, the rights themselves remaining unchanged. The coast thus specified is known shortly as the "French Shore."

The treaty stipulates that the island shall belong "of right wholly to Great Britain," but the subjects of France "shall be allowed to catch fish and to dry them on land" on the extent of coast specified. It is also laid down that "it shall not be lawful for the subjects of France to erect any buildings there besides stages made of boards and huts necessary and useful for drying of fish, or to resort to the said island beyond the time necessary for fishing and drying of fish." Upon these words the French claim an exclusive right to the French shore, and to prevent the people of Newfoundland from any use of that whole extent of coast; so that if any buildings

are erected there, or operations of any nature carried on, the French ships have a right to destroy the one and put a stop to the other. The French catch lobsters and erect permanent canning establishments there and prevent the English from doing the same; they seize all English fishing implements found there, and drive away all English fishermen. The French also erect salmon weirs up the rivers and prevent the English from doing the same. The English Government reserve the French treaty rights in all land grants, and in 1879 inhibited a railway to St. George's Bay upon the French shore, on the ground that the French would regard it as an invasion of their treaty rights. In this way the colonists are debarred from developing the fairest half of their own island lest some French fishermen should come along and want the very place where a wharf or house may have been erected. This is the more unreasonable, inasmuch as the French fishing operations had, two years ago, dwindled down to seven fishing vessels, so that the whole coast might be said to have been practically abandoned. There had never been a French fishing station at St. George's Bay, so that a railway terminus there could not have interfered with their fishing operations. During the last two years there has been a slight increase in the number of French vessels on the coast.

The French take their ground upon the letter of the treaty. Their rights to use the shore being specified, they argue to be on that account exclusive of any other right. Therefore they repudiate any concurrent right of the colonists, and, of late years, the French naval officers have carried out the most extreme interpretation with great vigour. This was due probably to the fact that the lobster-canning business has been commenced recently, and also to pique at a somewhat extreme measure of the

Newfoundland legislature aimed to prevent the sale of bait to other than Newfoundland fishermen.

On the other hand, the words of the treaty appear to be sufficiently clear; for when it was signed no other fishery than the cod fishery could have been contemplated. If there could be any reasonable doubt it would be removed on reference to the *Mémoires de Mons. de Torcy*, who was one of the negotiators. The word "morues" is used always, and not the more general word "fish." He writes that while the king consents to cede Placentia and the island of Newfoundland, he persists in reserving to the French "the liberty of fishing and of drying codfish (morues) on the Petit Nord." In the discussion, which became warm, the question was limited to codfish (*de pêcher et de sécher les morues*) no other fish was present in their minds, since none other is mentioned; and he relates that Prior (one of the English negotiators) returned and announced that the English Government would yield this "much contested point of catching and drying 'codfish' 'morues' on the coast."

That codfish alone are intended is clear from the fact that the words "fishing and drying" are always mentioned together as one expression. The canning industry is very recent, and canned lobsters are not dried even if lobsters were fishes. Salmon weirs are neither stages nor huts for drying fish.

While the interpretation of the treaty is clear enough, the question is unfortunately complicated by a declaration of the English Government, afterwards embodied in the preamble of an Act of Parliament (28 George III. cap. 35), in which it is set forth that the king, in order to prevent quarrels among the fishermen, "was pleased to engage that he would take the most positive measures for preventing his subjects from interrupting, in any

manner, by their competition, the fishing of the French, during the temporary exercise there which is granted them upon the coasts of the island of Newfoundland, and that he would, for that purpose, cause the permanent settlements which should be formed there to be removed; and that he would give orders that the French fishermen should not be incommoded in the cutting of wood necessary for the repair of their scaffold huts and fishing-boats; and that the 13th article of the Treaty of Utrecht, and the method of carrying on the fishery which had at all times been acknowledged, should be the plan upon which the fishery should be carried on there." There is a plain contradiction in this promise of the king which goes beyond the treaty, while intending specifically only to confirm it, and the matter is further complicated by the words of the statute which empower the king's officers "to remove, or cause to be removed, any stages, stakes, train-vats, or other works whatever, for the purpose of carrying on fishery, erected by his Majesty's subjects, and also all ships, vessels, and boats which shall be found within the limits aforesaid; any law, usage, or custom to the contrary notwithstanding." It is not the Treaty of Utrecht then which embarrasses the colonists, but the unadvised and uncalled for promise of the king, formally endorsed by an Act of Parliament. When will some fairy godmother relieve our Cinderella from the careless engagements of the Motherland?

Islands of St. Pierre and Miquelon

Ten miles west of Crew point (May point) the eastern headland of Fortune Bay, lie the islands of St. Pierre and Miquelon, the last remaining possessions of France in North America. These islands have had more vicissi-

tudes than have fallen to the lot of many greater and more important lands. Since the year 1713 they have been four times ceded to, or captured by, England, and four times restored to France. For fifty years, 1713-1763, St. Pierre was in the possession of the English. In 1778 it was captured by Admiral Montague, who deported all the inhabitants to France, 1932 in number; in 1783 the exiles returned, and when the Revolution broke out in France they had their Jacobin Club, and their Committee of Public Safety, and their Liberty tree: but had not got any farther when, in 1793, the islands were again taken and the citizens deported again to France. At last, in 1816, at the general peace they were finally restored to France, and 645 of the old colonists returned.

There are two islands—St. Pierre and Miquelon. The latter is the larger, but it is practically two islands connected by a neck of sand five and a half miles long. The northern portion is called Great Miquelon, and the southern, Little Miquelon or Langlade Island. Both islands are high, rocky, and barren, and they are surrounded by rocky islets; so that navigation is intricate in fair weather; and as they are more subject to fog than any other part of the coast, navigation is often dangerous. The cliffs are from 650 to 800 feet high. The contour of Great Miquelon is irregular, and a projecting semicircular cliff forms a roadstead at the northern end, where there is also a settlement. The cliffs of Little Miquelon form a level plateau 656 feet high. The channel between it and St. Pierre Island is three miles wide.

St. Pierre is a steep rocky island of many peaks. The town is the residence of the governor, and is as thoroughly French in every respect as any town in

Normandy. Every detail of a complete civil and military organisation is seen—departments of marine, of health, of religion, of education, of war, of finance, superintendents of roads, of charities, of pilots. The total resident population of the islands is 5440, of whom 4804 live in St. Pierre, but, during the fishing season, the little town is crowded with fishermen, and the harbour with fishing vessels from France. The port is well regulated and orderly, the quays are massively built of stone, and the houses are generally of stone. The dress and habits of the people are French, cafés and cabarets abound, and the people are bright and gay as in any seaport of Old France.

The harbour is good and open all the year round, and is usually full of shipping, for all the fishing fleet from France to the Grand Banks resort here for bait and supplies. The imports to this little island amounted, in 1885, to the remarkable sum of Fr.20,199,062 or \$4,039,812 nearly \$800 per head of the population—an amount unaccountable until the admirable position of the island for smuggling into the neighbouring British colonies is considered. French wines, brandies, and other goods are admitted free, but are subject to heavy duties in Canada, and were apt to overflow upon the neighbouring coasts until increased vigilance was excited, and, in 1892, the imports consequently decreased to about half the above amount.

NOTE TO CHAPTER XXII

The following are the most useful works of reference for Newfoundland :—

HARVEY, Rev. M., LL.D.

Newfoundland as it is in 1894. J. W. Withers, St. John's, N.F.: 1894.

HARVEY, Rev. Dr., and HATTON, JOSEPH.

Newfoundland, the Oldest British Colony. Chapman and Hall,
London: 1883.

Newfoundland Government Year-Book and Almanac published
annually, St. John's, N.F.

PROWSE, D. W., LL.D.

History of Newfoundland, from the English, Colonial, and Foreign
Records. Eyre and Spottiswoode. 2nd Ed. London: 1896.

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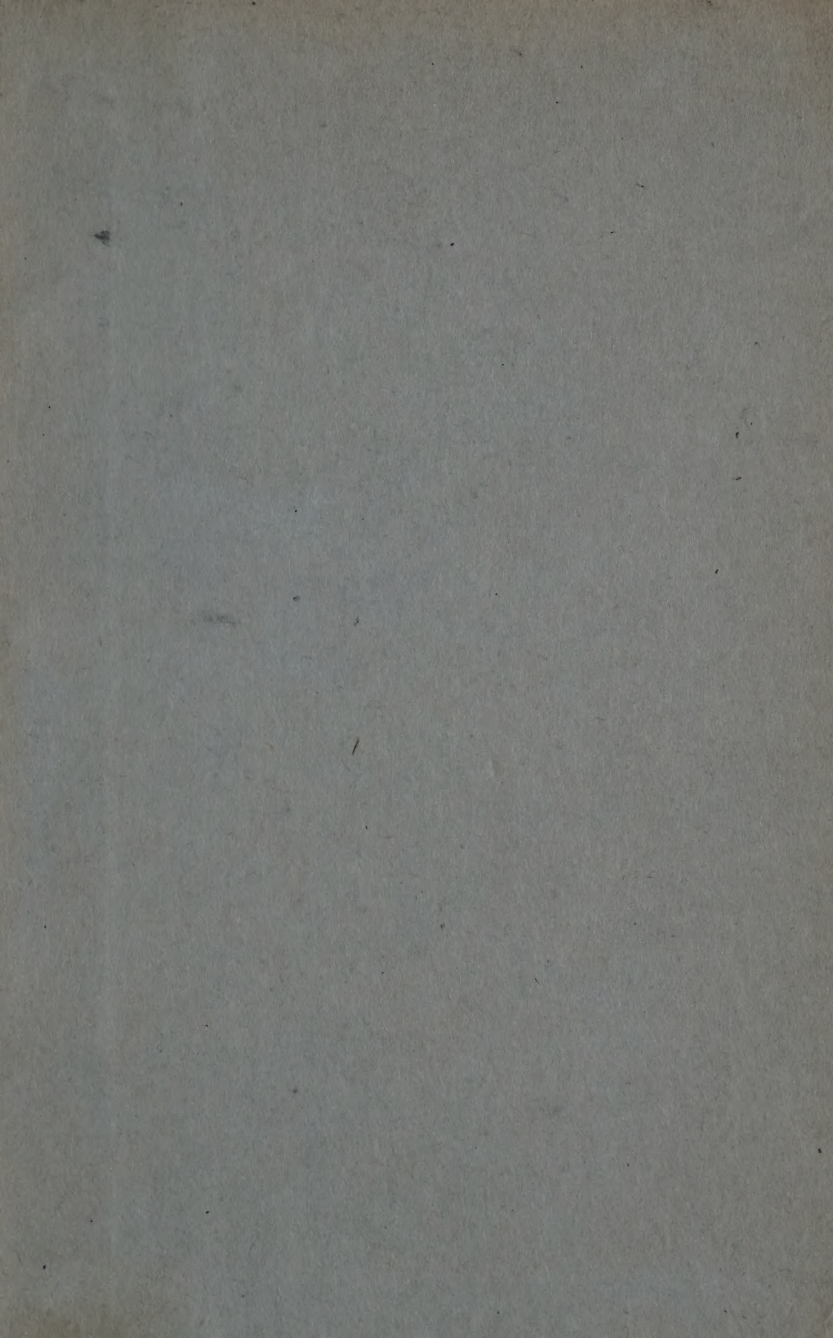
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